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A Grateful Mind: The Impact of Felt Fluency on Subjective Well-Being

by

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DISSERTATION

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in partial fulfillment of the requirements for

Doctor of Philosophy in Psychology

Wilfrid Laurier University

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Abstract

The practice of gratitude has become increasingly prevalent in popular culture as a self-help intervention aimed at improving individuals' happiness and overall well-being. Although a great deal of empirical work has promoted the benefits of practicing gratitude (see Davis et al., 2016 for a review), less work has been conducted examining the conditions under which the traditional gratitude interventions are less effective, or even entirely ineffective. One potential boundary condition that may be associated with the benefit individuals report after engaging in the practice of gratitude is fluency – an individual's subjective experience of ease or difficulty. When tasks are experienced as relatively easy, people are more likely to indicate they possess the qualities inherent within the task (e.g., Schwarz et al., 1991). That is, if a gratitude exercise is experienced with relative ease, this ought to be reflected in their subsequent self-relevant judgments (e.g., greater reported gratitude and well-being). In Studies 1-3 we attempted to manipulate fluency (i.e., subjective experience of ease) in a common gratitude intervention in order to assess its role as a potential moderator between the practice of gratitude and well-being. Although the manipulation was unsuccessful, we found individual difference evidence that engaging in a gratitude task was associated with greater well-being when the task was experienced as subjectively easy; but was no different from a control when the task was experienced as subjectively difficult. Next, we tried to mitigate the negative impact of low fluency by providing an alternative explanation for its meaning – namely that it was not important diagnostically (Study 4) or that it indicated more meaningful responding (Study 5). Although Study 5 showed some dampening of the effect of fluency, it failed to reach significance. Finally, overall effects were examined in a series of meta-analyses. Overall, the results provided evidence that gratitude tasks were associated with greater well-being when they

were experienced as easy, but were no better than a control when they were experienced as difficult. Further, as subjective difficulty increased, gratitude tasks became less effective (as evidenced by an overall negative slope) as a means of boosting well-being; control tasks however were unaffected by subjective difficulty (as evidenced by a flat slope). These studies represent some of the first steps toward understanding the role of individuals' phenomenological experience in response to a gratitude intervention. Future directions and real-world implications are discussed.

Keywords: gratitude, positive psychology, happiness interventions, subjective well-being, affect, fluency

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A Grateful Mind: The Impact of Felt Fluency on Subjective Well-Being

The desire to be happy and to learn the secrets integral to living a full, satisfying life has been a rather consistent and overarching human motive through time, as reflected culturally and societally; from the ancient teachings of Buddha, through to the current positive psychology movement with its focus on optimizing psychological fitness, bringing people “up” instead of maintaining a status quo. A body of empirically validated, peer-reviewed literature stemming from positive psychology (see Davis et al., 2016; Sin & Lyubomirsky, 2009 for reviews) is also being translated into a growing variety of widely available self-help books and self-driven interventions aimed at assisting in the process of becoming happier. Daily practices aimed at experiencing and deepening the positive aspects of life have become relatively common and so popular that there are now a number of organizations whose purpose is to help people become happier and higher functioning through the implementation of these practices. Given how prevalent these interventions have become in industry, understanding which types of “happiness-boosting” interventions are of particular benefit is important. One intervention that is rather prevalent in the literature, and in industry discussion surrounding happiness, involves people bolstering their own happiness through the expression of gratitude (e.g., Emmons & McCullough, 2003; McCullough, Tsang, & Emmons, 2004; Sheldon & Lyubomirsky, 2006). Gratitude can stem from, and be expressed toward: interpersonal sources (e.g., important others), the self and personal accomplishments, or a variety of life experiences (e.g., Algoe & Haidt, 2009; Algoe, Haidt, & Gable, 2008; Wood, Froh, & Geraghty, 2010; Wood, Malby, Stewart, & Joseph, 2008; these will be discussed in greater detail later); the positive impact of which has been well documented. In the present work, we aim to delve deeper into a current (and highly popular) gratitude intervention in an attempt to (a) replicate past work regarding the

effectiveness of practicing gratitude, (b) examine a potential moderator (experienced difficulty) that may be diluting or neutralizing the effectiveness of this intervention for some people, and (c) attempt to ameliorate the impact of this moderator, so that when this task is prescribed or sought out it is indeed beneficial for the most people. To begin, an overview of the field within which this research is situated is presented.

Positive Psychology: Shifting Focus

The field of positive psychology has experienced a great deal of increased interest and growth since the late 1990s (see Linley, Joseph, Harrington, & Wood, 2006), in large part as a response to the historical dominance of focusing on mental illness, adversity, and the impact of negative events in life that had dominated the field of psychology more generally, especially following the second world war (e.g., Seligman & Csikszentmihalyi, 2000). Given that the goal to be happy is almost ubiquitously experienced and highly valued (Diener & Biswas-Diener, 2008), the transition toward a focus on *increasing* mental health and away from treatment aimed at *maintaining* the status quo was felt by many to be long overdue. Spear-headed by Seligman, the field of positive psychology was formally established in 1999 as a means by which to research and understand the optimal human condition; that is, research was shifted from a single lens focus on the absence of psychological symptoms (e.g., depression) to a multi-faceted focus that included examining the conditions under which humans flourish and experience increased psychological well-being (e.g., life satisfaction). A great deal of research has since worked toward elucidating and understanding the behaviours and traits of individuals that are related to optimal well-being (e.g., Lyubomirsky, Sheldon, & Schkade, 2005; Seligman, 2004; Snyder & Lopez, 2009; Tkach & Lyubomirsky, 2006). More recently, the field has further transitioned from the purely empirical study of positive psychological traits and how they are correlated with

psychological well-being to a more applied approach involving the creation, use, and evaluation of various positive psychological interventions (PPIs). Simply put, researchers began to focus on examining the ways in which people could be trained (or train themselves) to engage in a variety of positive behaviours known to be related to optimal functioning as a means by which to increase happiness and well-being (e.g., Howell, Passmore, & Holder, 2016; Lyubomirsky & Layous, 2013).

Happiness as Research

Numerous researchers and thinkers have suggested that the ability to be happy and contented in life is a hallmark of increased adaptation and positive mental health (e.g., Diener, 1984; Lyubomirsky, King, & Diener, 2005). However, it is important to note that when discussing psychological well-being, the focus is not merely on *feeling good* (referred to as hedonic well-being) but is also concerned with the notion of *functioning well* (or eudemonic well-being; e.g., Howell et al., 2016; Huta & Rayna, 2010; Keyes & Annas, 2009; Ryan & Deci, 2001). The *feeling good* aspect of well-being – which is what is commonly brought to mind when referring to “happiness” – reflects a positive emotional state that is typically short-lived, provides short-term benefits, and occurs in response to a specific stimulus (e.g., positive affect). The *functioning well* aspect of well-being on the other hand, reflects a more global outlook and experience of life, which is directly linked to meaningfulness, provides long-lasting and long-term benefits (e.g., self-acceptance), and is unlikely to change drastically in response to simple stimuli (e.g., Fredrickson, 2004; Oatley & Jenkins, 1996; Rosenberg, 1998). Indeed examining the correlates of happiness and well-being there are a number of intra- and inter-personal factors beyond simply *feeling good* that are associated with experiencing greater *functional well-being*, for example: higher relationship satisfaction, stronger immune system functioning and better

overall physical health, higher incomes, and a tendency to engage in more prosocial behaviours (Clark & Collins, 1993; Lyubomirsky et al., 2005) – including becoming more cooperative and charitable (Isen, 1970; Kasser & Ryan, 1996; Williams & Shiaw, 1999). Although it is known that the ability to live a hedonically and eudaimonically fulfilling life is associated with a plethora of potential benefits as stated above, actually *feeling good* and *functioning well* in life is no easy task.

Positive Emotions Broaden and Build

From an evolutionary perspective, humans have learned to attune to the negative aspects of their environments in order to survive. Negative emotions facilitated the fight or flight response that was key to survival – quick and decisive action that carried with it immediate benefit. However, in the modern Western world, this focus on the negative is not typically adaptive; life threatening situations tend to be experienced rather uncommonly. According to Fredrickson's (2004) broaden-and-build theory of happiness, the experience of negative emotions (which are rather common due to this bias toward survival) *narrows* an individual's thought-action repertoire to the point where they only see specific action tendencies available to them in response to various stimuli (i.e., attack or flee). This narrowed focus in essence creates inattentive or unintended blindness to anything outside of that specific thought-action tendency, in effect dampening their awareness and attention to the positive (which historically has not required the same degree of heightened awareness) and highlighting the negative. As a result, negative emotions and experiences, as well as simply negative experiences in the outside world, become more accessible; and this can lead to a continued downward spiral in which individuals are consistently missing the positive, not because it does not exist, but because it is being overshadowed by the negative which commands a disproportionate share of attention.

On the other hand, when an individual experiences positive emotion this appears to *broaden* their thought-action repertoire – that is, positive emotions widen the array of thoughts and actions that are brought to mind, providing individuals with a variety of options for how to respond to their environment (e.g., play, investigate, relish, etc.) – thus, the action tendencies are understandably rather vague and unspecified (Fredrickson, 1998, 2004; Fredrickson & Joiner, 2002). Although the *narrowed* focus brought about by negative emotions is considered to be associated with direct, immediate, and short-term benefits – i.e., not dying – the *broadened* focus of positive emotions emphasizes the tendency to approach (i.e., when something is experienced as pleasant or rewarding, individuals continue to seek these types of experiences; Cacioppo, Priester, & Berntson, 1993; Davidson, 1993; Frijda, 1994) or continue actions (Carver & Scheier, 1990; Clore, 1994), which in turn is thought to help individuals *build* their personal resources. Specifically, this broadened mindset allows individuals to discover and enact new ideas and actions that stockpile in terms of their physical, intellectual, social, and psychological responses in future situations. However, even though humans can utilize both the *narrowed* and *broadened* focus, the instinct to protect and survive seems to have people erring more often on the side of caution, and thus relying more on their negative emotions to influence their behaviour.

Research has shown that individuals who are primed with, or focusing on, negative emotions are not only inattentionally blinded to the positive, but are also apt to incorrectly interpret neutral aspects of their environment in a negative light because they are attending to and processing different information in their social environment than those experiencing more positive emotions (Massad, Hubbard, & Newston, 1979). For example, participants who were shown a series of ambiguous faces that were associated with a negative emotion (e.g., “angry”) were more likely to ascribe negative affect to a new series of ambiguous faces, compared to

those who had been exposed to ambiguous faces that were associated with a positive emotion (e.g., “happy”), who saw the new series of ambiguous faces as displaying more positive affect (Halberstadt, Winkielman, Niedenthal, & Dalle, 2009). This serves to highlight how strongly an individual’s expectations and prior conditioning can impact their processing and interpretation of their environment.

Not only does experiencing the positive lead an individual to more readily notice the positives in their environment (Halberstadt et al., 2009), as stated above, positive emotions elicit an expanding, or *broadening* experience, which widens the number and variability of thoughts and actions that come to mind in response to various stimuli (Fredrickson, 2004). People experiencing positive affect show more unusual thought patterns (Isen, Johnson, Mertz, & Robinson, 1985) marked by greater flexibility (Isen & Daubman, 1984), creativity (Isen, Dabuman, & Nowicki, 1987), and integration (Isen, Rosenzweig, & Young, 1991) of thought. Further, people experiencing positive affect experience expanded attention (Derryberry & Tucker, 1994) and increased openness to information, showing preference for variety and greater acceptance of a wider array of behavioural options and responses in situations (Estrada, Isen, & Young, 1997; Kahn & Isen, 1993).

Importantly however, positive emotions not only broaden an individual’s momentary thought-action repertoire, but also carry long-term adaptive benefits as this broadening is thought to build their personal resource store (Fredrickson, 1998, 2000, 2004) because these positive emotions accumulate and compound with one another. Specifically, the broadening that accompanies the experience of a positive emotion increases the odds of experiencing subsequent events in a more positive frame – for example, seeing an obstacle as a chance to learn instead of an insurmountable barrier – in turn leading to an ever-greater increase in positive emotions

(Fredrickson & Joiner, 2002); in short, positive begets more positive. It has further been suggested that the benefits accrued during states of positive emotions are durable and long-lasting and can be drawn on long after the positive state has passed, thereby contributing to well-being after the initial emotion has worn off (Fredrickson & Joiner, 2002).

Fredrickson and colleagues have proposed that positive emotions might in fact function to correct for the narrowing aspect of negative emotions – this is known as the *undo hypothesis* (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Branigan, & Tugade, 2000). Specifically, according to the undo hypothesis, the experience of positive emotions can facilitate the undoing of preparation for the narrowed and specific thought-action tendency elicited by a negative state. That is, the broadening effect created by experiencing the positive has the capacity to outweigh the narrowing effect of a negative emotional state, providing a more nuanced view of the situation and the ability to see various alternative actions in response to a specific negative stimulus. The experience or induction of positive emotions in the face of negative affect or events, has been related to greater cardiovascular recovery following an anxiety-provoking experience (Fredrickson & Levenson, 1998; Fredrickson et al., 2000) and better coping with chronic stress (Folkman, 1997; Folkman & Moskowitz, 2000; Lazarus, Kanner, & Folkman, 1980) and adversity (Aspinwall, 2001). Fredrickson (2004) suggests that people may in fact improve their psychological well-being, and perhaps physical health, by cultivating and utilizing experiences of positive emotions at opportune moments to better cope with negative emotions when they arise.

The broaden-and-build theory suggests that individuals' positive emotions and broadened thinking have a reinforcing effect on one another, such that an increase in positive emotions leads to more broadened thinking, which in turn leads to greater experience of positive emotion

and so on. This effect has been termed the *upward spiral* – more specifically, individuals who experience greater positive emotion are suggested to become more resilient to adversity, and following this increased resilience, experience greater positive emotion over time (Fredrickson & Joiner, 2002).

Positive Psychology: Interventions Aimed at Increasing Happiness

Overall, given the well-being benefits of positive emotion, it would seem that the message of fostering the positive – and helping people to cultivate it within themselves – is an enticing and promising route for intervention. If people can be trained to focus more on the positive (i.e., the good things in their lives, the positive emotions they are feeling) and less on the negative (as has been necessary in the evolutionary past), they may be able to create a store of emotional resources to draw on in times of stress and in the face of negative events and emotions. As a result, they would be expected to lead happier, more contented and fulfilling lives. However, the majority of the pioneering work in the field of positive psychology focused more on examining individuals who were already leading fulfilling, contented lives, and assessing the qualities they possessed that were related to greater well-being and functioning.

Thus, the logical next step was to begin to create – and empirically test and validate – positive psychological interventions that would allow more individuals to tap into their own positive mindsets and begin to live happier, healthier lives. Indeed, a great deal of work has gone into creating and testing various types of positive psychological interventions (PPIs), including: engaging in random acts of kindness, envisioning best possible selves, determining and utilizing signature strengths, working on personal goals, and practicing acknowledging and expressing gratitude (e.g., Emmons & McCullough, 2003; Seligman, Steen, Park, & Peterson, 2005; Sheldon, Kasser, Smith, & Share, 2002). However, although the vast majority of this work has

shown the potentially great positive impact of these interventions, much more work needs to be done examining their true effectiveness (i.e., are some more impactful than others and are they truly better than controls), longevity (i.e., do their effects persist over time), and potential boundary conditions (i.e., for whom do these interventions work and not work – and why) that exist. Nonetheless, positive psychology holds a great deal of intuitive appeal due to its optimistic and promising message – and not just in the academic realm. The idea of becoming a better version of oneself through focusing on and embracing the positive holds a great deal of popular appeal, and quite readily lends itself to imagining possible interventions that are meant to derail the downward spiral created by a focus on the negative and instead tap into the positive mindset and build positive thinking habits. However, although the field of positive psychology has been built on empirical research, due to the nature of its popular appeal, it has also been taken up by a wide range of more “pop psych” practitioners.

Positive Psychology in the Real World

A number of self-help books have been published over the years – by both well-known psychologists in the field (e.g., Diener & Biswas-Diener, 2008; Haidt, 2006; Lyubomirsky, 2008; Seligman, 2002) and self-proclaimed happiness experts (e.g., Achor, 2010; Rubin, 2010) – that have thrust positive psychological interventions into the hands of the populace. On the surface this may seem like a rather positive advancement and for some people it may be. However, it may also prove that encouraging wide adoption of these techniques is still premature; although the findings from the academic field of positive psychology are built upon empirical and peer-reviewed research, not all prescribed interventions have been rigorously tested, and/or the boundary conditions of these interventions are still being investigated and are largely unknown. The recommendations made in the pop-psych, self-help literature are often prescribed as a “one

size fits all, quick fix” (i.e., “if you do x for thirty days you will be happier”) – or may be misinterpreted in this way by the lay public. When interventions are oversold – or if there is a disconnect between how they are intended and how they are used – they could conceivably attract individuals looking for help, but set them up for failure.

Can Happiness Be Altered?

Many researchers believe that individuals have a genetically determined set point (or range) for happiness (e.g., Fujita & Diener, 2005). In fact, some studies have shown that the heritability of well-being may be as high as 80% (Lykken & Tellegen, 1996) – though studies examining the heritability of affect and disposition of monozygotic and dizygotic twins reared together and apart have suggested between 40-50% as a more widely accepted estimate (Braungart, Plomin, DeFries, & Fulker, 1992; Tellegen, Lykken, Bouchard, Wilcox, Segal, & Rich, 1988; see Diener, Suh, Lucas, & Smith, 1999 for a more in-depth summary). Regardless, the sheer magnitude of the coefficient implicates at minimum a rather sizeable genetic influence – and indeed research has shown that over time, although individuals’ levels of happiness may increase or decrease in response to life events and situational factors, overwhelmingly, they return to their baseline levels (Headey & Wearing, 1989; Suh, Diener, & Fujita, 1996) – regardless of the fact that the vast majority tend to expect their life satisfaction to increase over time, particularly during young adulthood (e.g., Busseri, 2013; Busseri, Choma, & Sadava, 2009; Busseri & Merrick, 2016; Busseri & Peck, 2015). Although little can be done at this point to alter the influence genetics has on happiness and well-being, there are two other important aspects of individuals’ lives where they can attempt to regain control: life circumstances and intentional activities. Life circumstances (such as geographical location, age, personal history, etc.) are suspected to account for 10% of the variance in well-being (Argyle, 1999; Diener et al., 1999)

and although possible, it is often a difficult part of life to change. However, up to 40% of the variance in well-being is theorized to be accounted for by intentional activity (the activities and behaviours that individuals choose to engage in). Thus, changing an individual's intentional activities may provide a happiness boosting potential that is four times larger than changing their circumstances (Sheldon & Lyubomirsky, 2009).

As a result, distinguishing between momentary experiences of happiness and well-being, and more long-term lasting effects becomes important. Simply adding up an individual's positive experiences only predicts happiness to a certain point (Kahneman, 1999); that is, what makes people happy in small doses, or in the moment does not necessarily reflect larger long-term gains in satisfaction or subjective well-being. Even when an individual's circumstances change meaningfully, theorists suggest that these circumstances soon become the "new normal" and do not have the anticipated large, long-term effects on happiness that may have been expected. For example, research suggests that winning the lottery (a highly positive life event) or becoming paraplegic (a very negative life event), although they are related to immediate changes in overall levels of happiness, carry less weight and contribute less and less to general levels of happiness over time (e.g., Brickman, Coates, & Janoff-Bulman, 1978). The term *hedonic treadmill* (Brickman & Campbell, 1971) refers to what are seen as temporary gains in happiness, that individuals are quick to adapt to and thus the effect (positive or negative) of life events or changes in circumstance on happiness diminish rather rapidly and/or eventually disappear entirely (e.g., Costa, McCrae, & Zonderman, 1987; Diener & Lucas, 1999). Simply put, a change in circumstances may cause a shift in an individual's level of happiness, but these changes are merely temporary, and they will return to their baseline over time as people quite readily adapt to new standards and circumstances.

In contrast to circumstances, which are thought to *happen to* people and soon lose their impact, intentional activities refer to the way people *act upon* their circumstances through actively changing their behaviours (e.g., exercising or being kind to others; Keltner, & Bonanno, 1997; Magen & Aharoni, 1991) and/or cognitions (e.g., reframing potentially negative situations in a more positive light, or counting one's blessings; Emmons & McCullough, 2003; King, 2001) in order to achieve or strive toward greater happiness and well-being. It is suggested that the actions or practices in which people choose to engage – even though the choice may eventually become habitual (Lyubomirsky et al., 2005) – focus an individual's energy and behaviour in such a manner that leads to a more diverse and varied set of experiences (relative to the experiences produced by circumstances), which in turn is expected to potentially sustain or enhance positive affect in their life (Fredrickson & Joiner, 2002; Sheldon & Houser-Marko, 2001). Further by continually choosing to engage in these activities, it is suggested that one can directly counteract the tendency toward adaptation evidenced in changing life circumstances, as individuals make the effort to keep varying how and when they engage in the activity. However, some researchers have even gone so far as to suggest that trying to become happier is a futile exercise (Lykken & Tellegen, 1996), and in fact the decision to consciously exert effort to increase one's happiness may distract individuals from enjoying moments as they happen, instead focusing on the extrinsic goal to become happier, and not experiencing the positive that comes from intentional activity as a result (Schooler, Ariely, & Loewenstein, 2003; Sheldon, 2004).

Disposition and Emotion

There is a distinction to be made between positive emotions and positive moods (Fredrickson, 2004). Positive emotions are separate and distinct from moods in that they refer to personally meaningful circumstances (they reference an object), are short-lived, and reside in the

foreground of one's conscious mind (e.g., joy at receiving good news). Moods on the other hand are suggested to be without object, are longer-lasting and reside more typically in the background of consciousness, influencing an individual's world via more indirect routes (Oatley & Jenkins, 1996; Rosenberg, 1998). It has been suggested that making a conscious effort to feel happier (a focus on the emotion) may lead individuals to either (a) engage in activities that provide the immediate short-lived benefit of positive emotion (i.e., *feeling well*), or (b) detract from enjoyment of the present moment since the focus is placed on *being happy* rather than actually *being in the moment* (e.g., Schooler, et al., 2003; Sheldon, 2004). However, several PPIs foster the "in the moment" approach to happiness in ways that are thought to go beyond the short-lived. Indeed, experiencing positive emotions in the moment (at least in theory) works to broaden the types of thoughts and actions that come to mind in the moment, and also to build a store of personal resources that are durable – outlasting the transient emotional states that lead to their acquisition. In turn, these resources can be utilized in subsequent situations to help bolster further positive emotion, or to provide protection against the negative – thus, the emotional state and situational response become mutually reinforcing (Fredrickson, 2004). It is not unreasonable then, to suggest that if an individual focusses their energy into seeking out and experiencing the positive – by choosing activities that make them feel good – they will reap the benefits associated with building their personal resource store, even if the initial decision to engage was based on seeking happiness.

Gratitude as experienced in the moment, reflects a fleeting positive state which is typically related to increasing happiness in the moment (hedonic well-being), but has not necessarily directly related to long-term changes in overall happiness and well-being in past work. Gratitude as a life orientation, or trait on the other hand, involves an inclination toward

focusing on the positive, and “noticing and appreciating the positive in life” (Wood, Joseph, & Maltby, 2009, p. 443) and is thought to be more centrally tied to functional (eudemonic) well-being. It seems likely that the two are not mutually exclusive. Taking the time to notice, focus on, and experience the positives in an individual’s life in the moment (i.e., experiencing the emotion of gratitude) is likely to reinforce gratitude at a more dispositional level over time and may help to counteract the effects of the hedonic treadmill (Brickman & Campbell, 1971; Kahneman, 1999) by preventing individuals from taking the good in their lives for granted (Lyubomirsky, Sheldon, et al., 2005), and leading to long-term shifts in life satisfaction (Seligman, et al., 2005). Indeed, many PPIs focus on immersing entirely in the moment and embracing the experience as it occurs – but this does not always come naturally. For example, many gratitude interventions require individuals to focus on taking the time to reflect on the past and recognize the positive in their lives (e.g., Emmons & McCullough, 2003). It is suggested that by engaging in these types of activities, they become habitual and over time no longer rely on conscious effort to experience their positive effects. PPIs encourage individuals to shift their focus from trying to simply *be happy for happiness’ sake*, and instead highlight the importance of truly engaging in the moment and reflecting on the positive already present in an individual’s life – which will still be associated with the experience of positive emotion, but is more likely to lead to greater well-being in the long-term by building an individual’s storehouse of resources.

However, the suggestions that PPIs are capable of creating long-term shifts in happiness and well-being are largely theoretical – based mainly on correlational studies assessing the attributes of happy, high-functioning individuals and less on PPIs themselves (e.g., Fredrickson, 2004; Lyubomirsky & Sheldon, 2005; Seligman & Csikszentmihalyi, 2000; Tkach & Lyubomirsky, 2006). Various attitudinal (e.g., feelings of optimism and efficacy; Bandura, 1997;

Scheier, & Carver, 1993; Seligman, 1991; Taylor & Brown, 1988) and motivational (e.g., pursuing intrinsic goals; Emmons & King, 1988; Kasser & Ryan, 1996; Sheldon & Elliot, 1999) factors that hold some degree of volitional control, have been linked to greater well-being – suggesting that an individual's choices in life exert some degree of influence in this domain. For example, some research has shown that making direct attempts at increasing happiness (e.g., “acting happy”, “smiling”) are excellent predictors of actual happiness (Tkach & Lyubomirsky, 2006). And indeed, this may be why engaging in various PPIs are found to be effective – because they involve making a conscious and deliberate choice to focus on increasing an individual's happiness. It is further suggested that by actively engaging in efforts to remove themselves from situations or contexts that detract from well-being, people can achieve some control over their own well-being (e.g., Lyubomirsky, 2001). However, this change in behaviour and attitude can be difficult to achieve – new habits need to be formed to replace previously detrimental ones; and this is where PPIs can become particularly important.

Research suggests that engaging in PPIs may be a potential first step toward creating and sustaining these new beneficial habits. Interventions focusing on forgiveness (McCullough, Pargament, & Thoresen, 2000), thoughtful self-reflection (King, 2001; Lyubomirsky, Sousa, & Dickerhoof, 2006), and gratitude (Emmons & McCullough, 2003) have been found to be potential routes through which individuals may be able to influence their own happiness and well-being. The most studied and utilized PPI by far involves focusing on the positivity and blessings in an individual's life, or more simply put: practicing gratitude – and this is where the focus of our research lies.

Gratitude

Gratitude has traditionally been defined as a response to an *intentional* gesture that has *value* for the recipient (Lane & Anderson, 1976; Tesser, Gatewood, & Driver, 1968; Weiner, Russell, & Lerman, 1978, 1979), is *costly* to the benefactor (Okamoto & Robinson, 1997; Tesser et al., 1968), and is indicative of the *perceived responsiveness* to the recipient (i.e., is thoughtful; Algoe et al., 2008). This traditional definition of gratitude suggests that it is entirely interpersonal in nature and is always directed to noticing and appreciating the aid and kind acts directed toward an individual by others. However, conceptualizing and constraining gratitude as a concept in this manner, disregards a vast array of what people report feeling grateful for (Wood et al., 2010). For example, in Emmons and McCullough's (2003) seminal work in which participants were asked to list experiences of gratitude, a number of the reported events/circumstances did not include a benefactor and were related more generally to life experiences, or noticing the positives in life (e.g., "waking up in the morning"). Given that individuals naturally label and endorse events and circumstances outside of the interpersonal realm of received aid and kindness, it is reasonable to suggest that gratitude is broader than the traditional definition suggests and ought to reflect a broader focus that includes both interpersonal sources and the positive aspects in an individual's life. Emmons and Shelton's (2002) definition of gratitude as "...a felt sense of wonder, thankfulness, and appreciation for life... expressed toward others, as well as toward impersonal (nature) or nonhuman sources..." (p. 460), better encapsulates not only the operationalization of gratitude in the present work, but also reflects a more comprehensive and complex view of what gratitude truly is.

Feelings of gratitude have been related to greater subjective well-being, more physical activity, better sleep, less stress, increased likelihood of offering emotional support and help to

others (Emmons & McCullough, 2003; McCullough, Kilpatrick, Emmons, & Larson, 2001; Wood, Maltby, Gillett, Linley, & Joseph, 2008), experiencing pleasant emotions (Walker & Pitts, 1998), and increased happiness, pride, and hope (Overwalle, Mervielde, & De Schuyter, 1995); in addition gratitude is suggested to strengthen social bonds in interpersonal relationships and even within communities (Algoe & Haidt, 2009; Baumgarten-Tramer, 1938; Fredrickson, 2004). Further, it has been suggested that the ability to experience and express gratitude is a crucial factor determining people's well-being (Bryant, 1989; Janoff-Bulman, & Berger, 2000; Langston, 1994). In fact, over 90% of American teens and adults reported that expressing gratitude made them feel anywhere from "somewhat happy" to "extremely happy" (Gallup, 1998). Gratitude has thus been closely tied to mood, well-being, and life satisfaction both correlationally and when induced. Given the plethora of positive outcomes associated with practicing gratitude, it is not surprising that engaging in activities aimed at fostering the feeling of – and in some cases the expression of – gratitude has become one of the most widely utilized PPIs.

Gratitude as a Positive Psychology Intervention

Gratitude has been identified as a skill (Seligman, 2004) that through practice can be cultivated to amplify happiness and satisfaction. Typically, gratitude as a PPI has individuals focus on recalling and listing the aspects of their lives for which they are grateful (e.g., Emmons & McCullough, 2003). This framing allows individuals to focus on the things and experiences in their lives that naturally come to mind when they think of the positive emotion of gratitude, instead of forcing them to focus on only interpersonal sources – which may instead detract from true feelings of gratitude and potentially highlight feelings of indebtedness. Gratitude promotes the savouring of positive life experiences and situations, and its practice may help to counteract

the effects of hedonic adaptation by allowing individuals to extract the most appreciation and meaning from the good things in their lives. Further, it is suggested that the ability to notice and appreciate the good in individuals' lives and circumstances can work as an adaptive coping strategy through which they may be able to indirectly reframe or positively reinterpret stressful or negative life experiences (Lyubomirsky, Sheldon, & Schkade, 2005). Gratitude intervention research has most often involved having participants engage in brief (usually one session, but sometimes lasting up to a week) activities designed to increase feelings of gratefulness, and then assessing their reported well-being afterwards. For example, this has been done by having participants recall experiences of gratitude toward others, and then write a letter of thanks (e.g., Algoe & Haidt, 2009; Boehm, Lyubomirsky, & Sheldon, 2011; Froh, Kashdan, Ozimkowski, & Miller, 2009; Seligman et al., 2005).

The most common form of gratitude exercise by far involves having participants list things for which they are grateful (e.g., Emmons & McCullough, 2003; Geraghty, Wood, & Hyland 2010a, 2010b; Seligman et al., 2005). Seligman and colleagues (2005) conducted a study comparing a gratitude intervention in which participants listed three things they were grateful for each day over the course of a week, to a variety of other PPIs (going on a gratitude visit, recalling their best selves, using their signature strengths, and identifying their signature strengths), as well as a placebo control (journaling about early memories). Participants in the list-3-good-things condition showed significant benefit (i.e., they were happier and less depressed) at their one, three, and six-month follow-up posttests (relative to their own baseline measures) – though this effect was not present at the one-week posttest. This intervention was found in large part to be effective in the long-term because participants reported that it was enjoyable and self-reinforcing, and many chose to continue the exercise after the intervention period of one week

had ended. Indeed, the positive effect gratitude had on participants' well-being was mediated by the extent to which individuals continued to engage in the activity beyond the prescribed period. Thus, although participants in the list-3-good-things condition did not show improvement at the one-week follow-up, they were still likely to continue the practice of gratitude and as a result reaped the positive benefits in the longer-term.

Despite claims surrounding the robust effect of gratitude interventions (e.g., Emmons & McCullough, 2003; Seligman et al., 2005), questions linger about what this effectiveness suggests; i.e., gratitude interventions are effective *compared to what*? Past gratitude interventions have been compared to control groups in which participants were asked to report daily hassles (Emmons & McCullough, 2003) or list daily worries (Geraghty, Wood, & Hyland, 2010b) – which might naturally be expected to lead to greater distress and less happiness than listing instances of gratitude. However, as more research has been conducted, gratitude interventions have been found to be effective against both no-treatment controls and conditions listed as placebo (e.g., writing about early memories or a typical day; Seligman et al., 2005; Sheldon & Lyubomirsky, 2006; see Sin & Lyubomirsky, 2009 for a more in-depth overview). Furthermore, other research has shown that gratitude interventions are just as effective as proven, established clinical interventions (Geraghty et al., 2010a, 2011). There is still some debate about whether it is premature to label gratitude interventions as successful (Davis et al., 2016; Wood, et al., 2010) – especially given that some of the seminal work (Emmons & McCullough, 2003) utilized less than ideal control groups. As such, in the present work we are careful to utilize a control condition that is relatively neutral and thus can be used as a true comparison group. The use of potentially problematic controls however, is not the only concern regarding the practice of gratitude as a PPI.

Limitations to Gratitude as a Positive Psychological Intervention

The shift in the field of positive psychology toward empirically examining happiness and well-being was accompanied by booming interest of the lay market. More and more people began advocating for their own happiness by attempting to incorporate various PPIs into their own lives – and they were able to more readily find resources aimed at helping them do so (e.g., Achor, 2010, 2013; Hanson, 2016). There has been a large pop-psych movement aimed at teaching people how they can become happier – and as a result higher functioning – versions of themselves. Although preliminary results regarding many PPIs are promising, including gratitude interventions, it may be premature to thrust these interventions into the hands of the average consumer. The effects obtained have often been weak, interventions were not always compared to suitable controls, and they were not probed sufficiently to determine the boundary conditions and individual differences that may predict for whom the interventions were in fact helpful. There are likely several boundary conditions that would either dampen or entirely inhibit an individual's ability to respond favourably to a PPI.

For instance, individuals who seek out happiness-increasing interventions, and hold intentions to become happier, are the ones who appear to benefit the most from engaging in them (e.g., Ferguson & Sheldon, 2013; Sin & Lyubomirsky, 2009). It has been suggested that some of the positive effects that stem from engaging in gratitude interventions are due to these types of mere placebo effects (Davis et al., 2016). In fact, in a review of self-directed interventions reported to promote overall psychological well-being, researchers found that engaging in *any* activity that required self-discipline lead to greater psychological well-being (Lyubomirsky & Layous, 2013). And further research comparing interventions that were administered via individual or group therapy settings, or were self-administered, indicated that self-administered

PPIs were the least effective type of intervention (preceded by those administered in groups, and then individual therapy respectively; Sin & Lyubomirsky, 2009). It is important to continue to critically examine these interventions and their effectiveness before labeling them as vehicles of psychological well-being and distributing them en masse.

Specifically focusing on gratitude interventions, it is important to note that certain factors make it more likely individuals will be able to cultivate and experience gratitude in the first place. Personality is one such factor: at a correlational level, grateful individuals have been found to be more extroverted, agreeable, open, and conscientious, and less neurotic (McCrae & Costa, 1991; McCullough et al., 2001; McCullough et al., 2004; Wood, Maltby, Gillett, et al., 2008; Wood, Maltby, Stewart et al., 2008). Further, recent research found that narcissism, cynicism, and materialism/envy were negatively associated with gratitude (Solom, Watkins, McCurrach, & Scheibe, 2016). It has been shown that intentional happiness-seeking strategies partially mediate the relation between personality traits and happiness levels (Tkach & Lyubomirsky, 2006). That is, personality is strongly tied to levels of happiness and gratitude because traits influence the conscious self-regulatory actions (intentional activities) that one engages in. An extravert for example may seek out more social activities, which in turn influence positive moods and overall well-being (McCrae & Costa, 1991). People who express and experience greater gratitude then, may be influenced to do so because of the activities that they intentionally seek out – in part because of things like personality. This is not to suggest that individuals who are, for example less extroverted, are unable to cultivate gratitude in their lives, but that on average, this may prove to be more conscious, effortful (one can more readily change their intentional behaviours than they can their personality), and difficult.

There are many factors that influence the effectiveness of gratitude interventions. Thus, using a one-size-fits-all approach for these types of happiness inducing interventions would appear to be rather problematic as it does not consider the many different individual factors that would impact an interventions' ability to benefit those who engage in them. Given this, it is important that research hone in more on those factors to determine for whom gratitude interventions work, so that they can be utilized to their full potential.

One component that has not previously been examined, and that ought to be taken into consideration, is difficulty. An individual's subjective experience of a gratitude exercise in terms of ease (or difficulty) may have important implications regarding the benefit (or potential detriment) engaging in such an activity may provide. It is possible that feelings of ease (or difficulty) in completing a gratitude task may serve as important diagnostic information, tempering or altering the degree to which the practice of gratitude is experienced as beneficial. For example, if an individual finds it to be difficult to list things for which they experience gratitude, they may feel that they do not have much to be grateful for, and this in turn may make them feel more negatively and less positively at an affective level and regarding their current life situation. Thus, it is important to assess the degree to, and manner in which, individuals' phenomenological experience of fluency informs their self-relevant judgments. We will return to this idea later.

The Impact of Ease (Fluency)

It seems intuitive that when one is asked to think about and bring to mind examples of a specific behaviour or type of event, that the more instances recalled would be related to a greater endorsement of the frequency of the behaviour or event in question – a simple frequency bias. Indeed, when people only consider the content of their recollections, the more examples they

report, the more pronounced their conclusions from those examples (e.g., Bem, 1972; Wyer & Srull, 1989). However, research suggests that this is not always the case – that is, individuals do not always rely on the content of their experiences alone. A commonly accepted theory in the realm of social judgment research posits that people estimate the frequency of an event, or the likelihood of its occurrence, “by the ease with which instances of associations come to mind” and not simply the number of instances recalled (Tversky & Kahneman, 1973, p. 208) – this is known as the *availability heuristic*. People tend to not only rely on what comes to mind but also on the subjective experience that accompanies the recall process.

The ease with which information is encoded and retrieved (i.e., processing fluency) serves to act as an important internal cue that is used in judgment and decision making (e.g., Dunlosky, Baker, Rawson, & Hertzog, 2006; Koriat, 2008; Miele, & Molden, 2010; Song, & Schwarz, 2008). People assume familiarity or mastery in various realms based on their experience of high processing fluency – regardless of whether that fluency results from something as simple as high figure-ground contrast, easy-to-read print, or long exposure times (for reviews see Reber, Schwarz, & Winkielman, 2004; Schwarz, 2004). Accordingly, this effect also works in the opposite manner – when an individual perceives something to be difficult it is deemed to represent an inability or inadequacy in the relevant domain.

Furthermore, people have learned to associate feelings of ease with the number of experiences they have had – the result of this learned association is that when it feels easy to bring relevant memories to mind, people assume they have a large number of experiences to draw upon, but when it feels difficult they assume the pool of experiences is small (Michael, Braniff, Garry, & Loftus, 2014; Schwarz et al., 1991; Tormala, Petty, & Brinol, 2002; Tversky & Kahneman, 1973). This subjective experience of fluency has been found to overshadow the

actual content of the recalled information – even when individuals amass a large amount of evidence to support a particular position, they are less (more) likely to endorse it if the act of generating that evidence was difficult (easy).

Indeed, a series of studies by Schwartz and colleagues (Schwartz et al., 1991; cf. Michael, et al., 2014) provided evidence of this counter-intuitive effect. When participants were asked to describe more (i.e., 12) versus fewer (i.e., 6) examples of situations in which they had acted in an assertive manner, those who listed more examples reported the task to be more difficult and themselves to be less assertive than those who listed fewer examples. This effect also emerged when participants were asked to provide examples of 6 (or 12) unassertive behaviours, with those in the list-6 condition finding the task easier and subsequently reporting higher levels of unassertiveness even though they had recalled and listed half as many unassertive behaviours.

This seemingly counter-intuitive effect has emerged in other realms as well. Participants asked to recall 4 (experienced as easy) versus 12 (experienced as difficult) childhood events reported more complete memories of their childhood – that is, ease of recall lead to judgment of better childhood memories (Winkielman, Schwarz, & Belli, 1998). This effect of subjectively experienced ease has even been shown to impact: whether people endorse a statement as true (by writing the statement in an easy to read colour [Reber & Schwartz, 1999], or making the words rhyme [McGlone & Tofighbakhsh, 2000], people are more likely to endorse it as true); the extent to which people report using their bicycle as a mode of transit (people report using their bicycle more frequently when they recall three versus eight instances of use; Aarts & Dijksterhuis, 1999); and men's belief that they are at risk for heart disease (men infer they are at greater risk after recalling few rather than many risk-increasing behaviours; Rothman & Schwartz, 1998).

Other work has shown that students reported liking Tony Blair less after generating few (versus many) favourable statements about him, or generating many (versus few) unfavourable attributes (Haddock, 2002); investors like mutual funds more after listing a few rather than many of their advantages (Florack & Zoabi, 2003 as cited in Schwarz, 2004), consumers like a product less the more positive attributes they bring to mind (e.g., Menon & Raghurir, 2003; Wanke, Bohner, & Jurowitsch, 1997) and are more likely to defer making a choice when they generate more reasons for making that choice (e.g., Novemsky, Dhar, Schwartz, & Simonson, 2007), but hold an attitude position more strongly when they are required to come up with few versus many arguments in favour of that position (Haddock, Rothman, Reber, & Schwartz, 1999; Haddock, Rothman & Schwartz, 1996).

Taken together, these studies highlight the importance of considering individuals' subjective experiences when they are asked to think about, and provide examples for, a particular self-relevant construct – for the purposes of this dissertation: experiences of gratitude. The more instances of gratitude that an individual is asked to recall, the more grateful they should feel as a result – the process of amassing, and the content of, a large body of evidence should support the notion that they have a lot to be grateful for. Presumably, this would suggest that when instructed to recall instances of gratitude, doing so would increase the accessibility of these and similar instances in memory and thus, when asked to rate the extent to which they feel grateful, individuals should report higher levels of gratitude. Therefore, listing more examples should activate an entire network of “gratitude” and would conceivably be more beneficial than listing few instances.

However, the work on processing fluency cited above (e.g., Schwarz, 2004; Schwarz et al., 1991) suggests that to the extent to which an individual relies on their subjective experience

of completing the task – rather than the content of their recall – fluency will have a significant impact on their subsequent judgments. When a task is experienced as difficult it is theorized that individuals will automatically use this subjective experience as important diagnostic information that qualifies their endorsement of relevant characteristics. That is, the feeling of difficulty is translated to a lack of the characteristic in question– that is, “I must lack this quality because it was hard for me to complete a task related to that quality” (e.g., Schwarz & Clore, 1983; Schwarz, Strack, Kommer, & Wagner, 1987; Schwarz et al., 1991). However, people only rely on this process under conditions in which they are able to attribute their subjective experience as related to the judgment at hand (Schwarz et al., 1991). If the source of difficulty appears to reside within the self (even if it has been artificially created by the researcher; e.g., a passage provided for a reading comprehension task is in a very difficult to read font), the subjective experience of ease is spuriously attributed to a characteristic of the self (e.g., “I am a poor reader”). If on the other hand, individuals are able to attribute their experience of the task to an obvious external source (e.g., loud music playing during a reading comprehension task), then it is no longer regarded as diagnostic information and will not have an impact on self-relevant judgements (e.g., “I did poorly on that task because the music prevented me from concentrating”). This suggests a potential mechanism through which the impact of fluency on well-being following a gratitude task may be mitigated in the present work. Bringing conscious and deliberate attention to the processes occurring, or providing alternative explanations for these processes, should serve to render the phenomenological experience of fluency as non-diagnostic, thus disrupting its negative impact.

Goals of the Present Work

Given the pervasiveness of the suggestion, in both past research and popular culture, that gratitude is inherently positive and thus associated with a wide range of benefits for those who practice it (e.g., Achor, 2010; Emmons & McCullough, 2003), this dissertation will aim to examine the degree to which fluency does indeed exert an impact on individuals' self-reflective judgments of gratitude and well-being. Specifically, this will be examined by having individuals complete a gratitude task that will be manipulated to feel either relatively easy or difficult, and subsequently assessing the extent to which participants endorse feelings of gratitude and overall well-being. Although it seems intuitive that an activity designed to enhance gratitude would lead to differences in reported feelings of gratitude as a result, much of the previous work focusing on gratitude as a PPI (and PPIs in general) has used various measures of well-being as the main outcome variables (e.g., Geraghty, 2010a, 2010b; Seligman et al., 2005; Sheldon & Lyubomirsky, 2006; see Davis et al., 2016 for an overview). Thus, in the present work, both the intuitive measure of gratitude, as well as an established measure of subjective well-being (SWB) will be collected.

To begin, our first hypothesis is that participants who engage in a gratitude task will exhibit higher levels of both gratitude and SWB than those who complete a control task. However, we further expect that task difficulty will temper the predicted positive effect of the gratitude manipulation – such that when participants experience difficulty completing the gratitude task, outcome measures will not differ from the control. Fluency will be manipulated, based on past work (e.g., Schwarz et al., 1991) by having participants list either few (i.e., *easy* condition) or many (i.e., *difficult* condition) instances of gratitude. Following this, to the extent that we uncover a link between felt fluency and well-being, the next step will be to explore

potential ways in which the negative impacts of experienced difficulty may be disrupted or entirely mitigated.

Study 1

Method

Participants

Participants consisted of 153 CrowdFlower workers who completed this study in exchange for \$0.50US. However, nine participants failed the attention check (“This item is an attention check, please respond by selecting 6 for this item.”) and/or responded either incompletely or with gibberish (e.g., “www”) to the gratitude manipulation and were thus removed from the sample (Meade & Craig, 2012). This left a total of 144 (female $N = 79$) participants for use in data analyses. The mean age of participants was 34.38 ($SD = 12.44$).

Procedure

Participants self-selected to complete the study (entitled: *Gratitude for Remembered Experiences*) online via the CrowdFlower platform. First, to determine well-being prior to beginning the study, participants responded to a series of items assessing their current life satisfaction, mood, and general happiness disposition, which were embedded among filler items. Participants then completed one of three gratitude manipulations (conditions described below). After completing the gratitude manipulation, participants responded to the main dependent measures examining subjective well-being and gratitude. After completing all relevant outcome variables, participants reported how difficult they felt the task they had completed was (1 = *extremely easy*, 10 = *extremely difficult*) – this measure was intended to serve mainly as a manipulation check (see Appendix A for correlations between all measures used across all studies).

Pre-measures. Participants were asked to respond to the three questions assessing their general well-being upon entering the study, answered on a ten-point scale: “How happy do you feel right now?” (1 = *extremely unhappy*, 10 = *extremely happy*), “I am satisfied with my life” (1 = *very strongly disagree*, 10 = *very strongly agree*), and “In general I consider myself to be...” (1 = *a very unhappy person*, 10 = *a very happy person*). These items were averaged to create a composite pre-measure of well-being ($\alpha = .91$) in which higher scores reflected greater well-being. This measure of initial well-being was collected to serve as a control variable in all relevant analyses to better detect the anticipated variations in well-being as an outcome.

Gratitude manipulation. Participants were randomly assigned via the survey hosting program Qualtrics to one of three conditions (two gratitude conditions and one control) when they entered the study. Participants in the two gratitude conditions were asked to identify and describe 3 (easy condition) or 12 (difficult condition) specific experiences in their lives that they were grateful for as well as an explanation as to why they were grateful for each. In the control condition participants were asked to pick words out of a given sentence using a rule provided, in addition they were asked to write a sentence containing specific words; participants completed each of these 12 times. For example, participants would see and respond to the following: “Please identify the verb in the following sentence: Scott lifted the weights over his head.”, and “Write a sentence using the following two words: circular, goblin” (a full description of the gratitude manipulation and control instructions for all studies can be found in Appendix B).

Subjective well-being. Participants completed a General Affect Scale (GAS) that broadly assessed two types of affect: positive affect (PA): $\alpha = .94$, negative affect (NA): $\alpha = .95$; Appendix C), which assessed the degree to which a series of positive (e.g., “interested”) and negative (“annoyed”) affective descriptors reflected their current feelings on a 10-point scale (1=

not at all, 10 = *very much*). This scale was utilized over the more commonly administered Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988) because the adjectives of positive and negative affect used herein were thought to better represent items reflecting the valence of mood (which is what we were primarily interested in) as opposed to general “activation” items (e.g., *jittery*, *active*) which are more appropriately captured with the traditional PANAS (see Feldman, Barrett, & Russell, 1998 for an overview). Further, participants completed the five-item Satisfaction with Life scale (Diener, Emmons, Larsen, & Griffin, 1985; $\alpha = .93$; Appendix C), in order to assess their overall level of satisfaction with their life. Items (e.g., “In most ways my life is close to ideal”) were answered on a 7-point Likert-type scale (1 = *very strongly disagree*, 7 = *very strongly agree*). Responses were averaged across all items to create a composite score in which higher scores reflected greater life satisfaction. These two scales were then combined to form an overall measure of subjective well-being ($\alpha = .90$ – calculated using software *Reliability of Difference Scores*, Watkins, 2008; SWB) as suggested by Diener and colleagues (Diener, 1984, 1994; Diener et al., 1999), by taking the Satisfaction with Life scale score, adding the mean of the positive affective descriptors and subtracting the mean of the negative affective descriptors (because the measures were collected with different scale end-points, scores were created using the standardized values).¹ This measure of SWB consisting of a general positive and negative affect scale in conjunction with the Satisfaction with Life Scale has been utilized effectively in past work (e.g., Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011).

¹ To assess whether results regarding SWB were driven mainly by one of the underlying factors, positive affect, negative affect, and satisfaction with life were examined as individual outcomes as well. No discernible pattern of results was detected – that is, the results obtained did not appear to be driven by one of the underlying aspects of SWB.

Gratitude. The six-item Gratitude Questionnaire (McCullough, Emmons, & Tsang, 2002; $\alpha = .88$; Appendix C) was used to assess participants' reported levels of gratitude following the manipulation. Participants' responded to items (e.g., "I have so much to be thankful for") on a 7-point Likert-type scale (1 = *very strongly disagree*, 7 = *very strongly agree*). Responses across all items were averaged to create a single gratitude score, such that higher scores were indicative of greater gratitude. Although we use this measure throughout, it is worth noting that it taps into more chronic, dispositional aspects of gratitude, and may exhibit less variation on the basis of temporary manipulations like those used in the present work (though it might be expected to shift more over time as a result of regular gratitude practice). We speculated that the temporary effects may appear more strongly on the SWB scale, as general measures of well-being (e.g., life satisfaction, affect, and SWB) are often utilized as outcome measures in gratitude research (see Davis et al., 2016 for a review).

Results

Initial Well-Being

Prior to conducting the main analyses, participants' baseline measure of well-being was examined. An ANOVA comparing pre-well-being across conditions indicated that, unexpectedly, there were significant differences between conditions, $F(2, 141) = 3.25, p = .042, \eta^2 = .044$. Post-hoc analyses (Fisher's LSD) indicated that participants in the list-12 condition had significantly lower levels of well-being at the outset of the study than did participants in the control condition, $M_{diff} = -1.01, 95\% \text{ CI } [-1.83, -.19], p = .017$. Further, participants in the list-3 condition had marginally lower levels of well-being at the outset of the study than participants in the control condition, $M_{diff} = -.74, 95\% \text{ CI } [1.51, .04], p = .063$. No differences were found in pre-well-being across the list-3 and list-12 conditions. However, as planned the pre-measure of

well-being was controlled for in all additional analyses, allowing any small differences at baseline to be held constant, and making analyses more sensitive and thus better able to detect changes in the outcome measures of well-being.

Manipulation Check – Degree of Felt Fluency

To assess whether the gratitude conditions had indeed elicited the anticipated differences in felt fluency (such that the list-3 task was experienced as easier than the list-12 task), an ANCOVA was conducted examining participants' rated degree of felt fluency (i.e., ease) across conditions. As shown in Table 1, there were significant differences in fluency across conditions, $F(2, 137) = 6.12, p = .033, \eta^2 = .082$. Post-hoc analyses (Fisher's LSD) indicated that, as expected, both the list-3 ($M_{diff} = -1.34, 95\% \text{ CI } [-2.39, -.28], p = .014$) and control ($M_{diff} = -1.88, 95\% \text{ CI } [-2.97, -.79], p = .001$) conditions were rated as significantly easier than the list-12 condition. The list-3 and control conditions were not found to differ significantly from one another.

Gratitude

Recall that it was anticipated that participants who completed a gratitude exercise would endorse higher ratings of gratitude than participants who had completed a control task, but that participants who completed the list-3 (easy) gratitude manipulation would report significantly higher gratitude than those who completed the list-12 (difficult) manipulation. To begin, the degree to which feelings of gratitude differed as a function of condition was examined. An ANCOVA revealed a marginal effect of condition on feelings of gratitude, $F(2, 139) = 2.71, p = .070, \eta^2 = .037$. Post-hoc analyses (Fisher's LSD) indicated that participants in the list-3 (easy) condition showed significantly ($M_{diff} = .40, 95\% \text{ CI } [.05, .76], p = .028$), and the list-12 (difficult) condition showed marginally ($M_{diff} = .33, 95\% \text{ CI } [.19, .09], p = .091$), greater feelings of

gratitude than those in the control condition. However, the list-3 and list-12 conditions were not found to differ from one another (see Table 1 for means). Thus, in line with expectations, completing a gratitude activity was related to higher reported feelings of gratitude. The list-3 (easy) condition did not differ from the list-12 (difficult) condition in reported gratitude contrary to expectations.

Given the reported differences in degree of felt fluency across the list-3 (easy) and list-12 (difficult) conditions, a Schwartz-style difference in feelings of gratitude had been anticipated – such that participants in the list-12 condition would report less gratitude than those in the list-3 condition. This not being the case, an exploratory linear regression was run regressing gratitude on fluency at step one, condition (dummy coded: list-3 = 1, 0; list-12 = 0, 1; control = 0, 0) at step two, with the addition of the interactions of condition by fluency at step three (controlling for pre-well-being in all steps), in order to determine whether individual differences in fluency may predict overall levels of gratitude (especially in the gratitude conditions). This regression provides a test of the fluency hypothesis but utilized individual subjective experiences of fluency rather than manipulated differences in difficulty. The relationship between fluency ($\beta = -0.20$, $p = .003$) and gratitude at step one was significant ($R^2 = .457$, $p < .001$), such that finding the task to be more difficult was associated with lower overall gratitude. Further, the effect of condition on gratitude at step two was significant ($\Delta R^2 = .040$, $p = .005$). Completing either the list-3 (easy; $\beta = 0.20$, $p = .006$) or list-12 (difficult; $\beta = 0.22$, $p = .004$) gratitude manipulation lead to significant increases in reported feeling of gratitude. The relationship between interaction and gratitude at step three was not significant ($\Delta R^2 = .012$, $p = .207$) and thus is not examined further. See Table 2 for a full breakdown of this regression.

Subjective Well-Being²

As with gratitude, it was expected that participants who completed a gratitude exercise would report significantly higher SWB scores than those in the control condition. Further, it was expected that this would be especially true for individuals in the list-3 (easy) condition – such that they would report greater SWB than participants in the list-12 (difficult) condition. To determine this, the extent to which participants' SWB differed as a function of condition was examined. An ANCOVA revealed significant difference in SWB across condition,³ $F(2, 140) = 4.39, p = .014, \eta^2 = .059$. Post-hoc analyses (Fisher's LSD) indicated that participants in both the list-3 ($M_{diff} = 0.72, 95\% \text{ CI } [0.16, 1.28], p = .012$) and list-12 ($M_{diff} = 0.79, 95\% \text{ CI } [0.19, 1.39], p = .010$) conditions reported significantly greater SWB than participants in the control condition.⁴ No differences were found between the two gratitude conditions (see Table 1). Consistent with expectations, completing a gratitude activity was associated with greater overall SWB. However, contrary to predictions, completing the list-3 (easy) task was not associated with greater SWB compared to the list-12 (difficult) task.

In order to test whether individual differences in felt fluency (rather than manipulated difficulty) had an impact on SWB an exploratory linear regression was conducted regressing

² Astute readers may recognize that some of the items included in the GAS may readily apply as a measure of state gratitude. Given that gratitude and emotions of thanks are so highly correlated with a variety of well-being measures (including other measures of positive affect; Overwalle et al., 1995; Walker & Pitts, 1998), it is not uncommon to see items such as *grateful*, *thankful*, and/or *appreciative* included in practice. To assuage any concerns over whether the findings presented here are driven largely by the inclusion of these “gratitude” items, in all studies the gratitude items have been examined separately, and the SWB analyses have been re-run excluding these items. As might be expected, across all studies, all of the gratitude interventions were associated with higher scores on the state gratitude items (examined as a composite) compared to the control conditions. Examining this measure in the same step-wise regression used throughout this document, indicates an effect of condition consistently, but conditions does not significantly interact with fluency. Further, patterns of results for SWB with the state gratitude items removed were practically the same across all studies – any variations found were slight and any exceptions will be noted where they arise. See Appendix F for a complete breakdown of the analyses of the state gratitude measure and SWB without the state gratitude items included.

³ When the state gratitude items are removed, this effect becomes marginal, $F(2, 140) = 2.70, p = .071, \eta^2 = .037$.

⁴ When the state gratitude items are removed, the list-3/control comparison becomes marginal ($M_{diff} = 0.55, 95\% \text{ CI } [-0.01, 1.10], p = .054$).

SWB on fluency at step one, condition (dummy coded: list-3 = 1, 0; list-12 = 0, 1; control = 0, 0) at step two, and the interactions of condition by fluency at step three (controlling for pre-well-being in all steps). The relationship between fluency ($\beta = -0.19, p < .001$) and SWB at step one was significant ($R^2 = .669, p < .001$), such that participants who experienced more difficulty completing the task reported lower SWB. The effect of condition on SWB at step two was significant ($\Delta R^2 = .040, p < .001$); completing either the list-3 ($\beta = 0.18, p = .001$) or list-12 ($\beta = 0.23, p < .001$) gratitude exercise was associated with higher levels of reported SWB. The relationship between interaction and SWB at step three was marginally significant ($\Delta R^2 = .010, p = .098$; see Figure 1 and Table 2) and is explored below.⁵

Examining the simple effects indicated that when the task was found to be subjectively easy (1SD below the mean), both the list-3 ($\beta = 0.16, p = .020$) and the list-12 ($\beta = 0.36, p < .001$) exhibited significantly greater SWB than those in the control; further, the list-12 condition exhibited significantly greater SWB than the list-3 condition ($\beta = 0.21, p = .020$). When the task was experienced as subjectively difficult (1SD above the mean), the list-3 condition significantly ($\beta = 0.18, p = .038$) and the list-12 condition marginally ($\beta = 0.15, p = .056$) exhibited greater SWB than those in the control. However, the two gratitude conditions did not differ from one another. Further, simple slopes analyses indicated that as subjective feelings of difficulty associated with the gratitude task increased, reported SWB decreased significantly in the list-3 (easy; $\beta = -0.17, p = .002$), list-12 (difficult; $\beta = -0.43, p < .001$), and control ($\beta = -0.20, p = .016$) conditions.

Discussion

Consistent with expectations, an exercise in which participants were required to list 12 specific things in their life they were grateful for was experienced as more difficult than a

⁵ When the state gratitude items are removed, this effect becomes non-significant, $t(134) = -1.61, p = .110$.

gratitude exercise where only three specific instances of gratitude needed to be listed. However, contrary to expectations based on previous work (e.g., Schwarz et al., 1991), completing the more difficult task did not result in participants experiencing less gratitude or overall well-being compared to those who had completed the easier gratitude task. Instead, completing either gratitude activity was associated with an overall increase in gratitude and well-being compared to the control condition. Interestingly however, although manipulated fluency did not have the anticipated impact on the outcome variables, participants' subjective feelings of fluency (regardless of condition) did – such that across all conditions, finding the task to be more difficult was associated with lower reported gratitude and well-being scores. This effect was however moderated by a marginal condition by fluency interaction when predicting SWB.

Specifically, when the task was experienced as relatively easy, the two gratitude conditions were found to be associated with greater well-being than the control; additionally, participants in the list-12 condition reported significantly greater well-being than those in the list-3 condition. This would suggest that when participants find it easy to list instances of gratitude, they rely on the content of their recollections to inform their subsequent judgments. That is, listing many (compared to few) experiences of gratitude is beneficial when it is easy. However, when the task was difficult, although participants in both gratitude conditions still reported greater well-being than the control, no difference was observed between the list-3 and list-12 conditions themselves. It appears that the content of recall (i.e., the number of experiences) was no longer acting as diagnostic information for participants. Further, all of the conditions exhibited negative slopes, indicating that as any of the tasks began to feel more difficult, well-being decreased.

Because the effect of subjective fluency is evident across all conditions, interpreting the control condition becomes slightly more tenuous. However, it is unlikely that difficulty in the two condition types (i.e., gratitude and control) is indicative of the same underlying process. In the gratitude conditions, the subjective experience of difficulty is thought to serve as an effective cognitive shortcut that provided participants with an indication of their overall levels of the construct being assessed by the task (i.e., gratitude) without a great deal of effortful consideration (Schwarz, 2004; Tversky & Kahneman, 1973). In the control condition, the information regarding difficulty of the task would have been unrelated to the construct of gratitude and thus should not have served as referential information when making self-relevant judgments. Gratitude and SWB have consistently shown a negative association with negative emotions (e.g., Emmons & McCullough, 2003; Storm & Storm, 1987). Participants in the control condition who found the seemingly simple task of picking words out of a sentence to be difficult may have experienced negative affect as a result, which may in turn have informed their subsequent judgments of gratitude and SWB in a negative manner.

The list-12 gratitude task – which was intended to be more difficult and was indeed rated as significantly more difficult than the list-3 gratitude condition as well as the control – was not experienced as actually being all that difficult (on a 10-point scale, the mean level of difficulty for the list-12 condition was just above the midpoint). Thus, it is possible that although the list-12 task was experienced as fairly difficult by some, the actual degree of difficulty was not salient enough to elicit the anticipated fluency effect. Therefore, the main aim of Study 2 was to alter the gratitude task in such a manner that the degree of difficulty associated with it would be closer to the high end of the scale and thus be more likely to elicit the anticipated fluency effect.

Additionally, although it is common for researchers to try to obscure the purpose of their research to participants, in the current research we are interested in how people engage with these gratitude tasks when they know what they are – because in the real world, people know what the task they are completing is designed for/intended to do. Specifically, it is likely that the average individual who is seeking out tasks of this nature is (1) looking to increase their own happiness and improve their well-being and, (2) fully aware of the anticipated effect of these types of activities – namely to increase happiness and overall well-being. Thus, it was important to present the gratitude activity in such a manner that it would more accurately reflect the expectations of individuals in the population who would be seeking out such activities in the first place.

In Study 1, we titled the CrowdFlower project “*Gratitude for Remembered Experiences*”, which likely worked to attract a certain type of individual – potentially one who is interested in gratitude or betterment of the self. In Study 2 this expectation was made explicitly clear to all participants. Many of the positive psychology books that are published for the lay market indicate that by engaging in certain activities, one will learn to live a more fulfilling life. For example, as presented in Achor’s incredibly popular book *The Happiness Advantage*:

When our brains constantly scan for and focus on the positive, we profit from three of the most important tools available to us: happiness, gratitude, and optimism... gratitude has proven to be a significant *cause* of positive outcomes... [individuals who are trained to practice gratitude are] happier and more optimistic, feel more socially connected, enjoy better quality sleep, and even experience fewer headaches than control groups (pp. 97-98, 2010)

The manner in which these tasks are framed for the average consumer suggests that it is likely that individuals who are seeking them out and engaging them have an inherent belief that they will become happier and more fulfilled through their practice. Although this may potentially elicit demand characteristics in participants, the decision was made to explicitly include information about the expected impact of the gratitude activity in all versions of the task moving forward to more accurately reflect the expectations of individuals who are purposely seeking them out.

Study 2

Method

Participants

A total of 129 CrowdFlower workers completed this study in exchange for \$0.50US. Twenty-three participants failed the attention check and either did not respond or responded with gibberish to the gratitude manipulation and as a result were removed from the sample (Meade & Craig, 2012); this left a total of 106 (female $N = 42$) participants for use in data analyses. The mean age of participants was 31.81 ($SD = 11.27$).

Procedure

Participants self-selected to complete the study (entitled: *Recalling Gratitude*) online via the CrowdFlower platform. Restrictions were set such that CrowdFlower workers who had participated in Study 1 were not eligible to participate in the present study. The method utilized in this study followed the same sequence as Study 1 with a change to the gratitude activity (detailed below).

Pre-measures. The pre-measure of well-being ($\alpha = .81$) used was the same as in the previous study.

Gratitude manipulation. Participants were randomly assigned via Qualtrics to one of three conditions (two gratitude conditions and one control) when they entered the study. Participants in the two gratitude conditions were given instructions similar to those in Study 1 with a few notable changes. First, the instructions indicated that the task participants were going to be asked to complete was found to be “particularly simple and easy” by most people. Including this information was intended to highlight that this task should feel easy, and therefore ought to especially encourage participants in the list-12 condition to focus on their own phenomenal experience of difficulty completing the task – thereby increasing its impact (Schwarz et al., 1991). Further, a line was included that the task had “been shown to increase happiness and well-being”. This was included in the instructions to more accurately reflect expectations of individuals in the real world who are seeking these activities. Additionally, the portion of the task that asked participants to describe *why* they felt grateful for the instances listed was removed, again to more accurately reflect the types of gratitude exercises that people are likely engaging in in the real world – as well as those that have been used in past research (Emmons & McCullough, 2003). Participants in the control condition were asked to pick words out of sentences using certain rules as in the previous study. The portion which required participants to write a sentence was removed in the present study – not only did this mirror the removal of the additional *why* portion in the gratitude activity, it also potentially may have decreased the chances that participants in this condition found it to be difficult.

Gratitude and subjective well-being. The outcome measures used were the same as in the previous studies: Satisfaction with Life ($\alpha = .92$), GAS (PA: $\alpha = .92$, NA: $\alpha = .92$) –combined to form a SWB score ($\alpha = .89$ for the difference score) – and Gratitude ($\alpha = .81$).

Results

Initial Well-Being

As in Study 1, prior to conducting further analyses the extent to which participants in the three experimental conditions differed in their levels of well-being at the outset of the study was examined. An ANOVA comparing pre-well-being, $F(2,103) = .97, p = .384$, across conditions indicated that there were no significant differences between the list-3, list-12, and control conditions at the outset of the study. However, as previously determined and to remain consistent with previous analyses, pre-well-being was controlled for in all analyses presented.

Manipulation Check – Degree of Felt Fluency

An ANCOVA was conducted examining participants' rated degree of felt fluency across conditions. As shown in Table 3, contrary to expectations, there were no significant differences in felt fluency across conditions, $F(2, 101) = 1.56, p = .216$. Although the omnibus ANCOVA did not indicate significant differences across condition, given that this measure was intended to act as a manipulation check, conditions were still examined to determine whether any differences existed. Post-hoc analyses (Fisher's LSD) indicated that, the list-12 condition was rated as marginally more difficult than the control condition ($M_{diff} = 1.08, 95\% \text{ CI } [-.15, 2.31], p = .085$). No other differences were found.

Gratitude

An ANCOVA was conducted examining participants' endorsed levels of gratitude following the manipulation. Defying expectations, no significant differences between conditions were found, $F(2, 102) = 1.26, p = .289$ (see Table 3 for means).

Additionally, the same linear regression conducted in Study 1, regressing gratitude on fluency at step one, condition (dummy coded: list-3 = 1, 0; list-12 = 0, 1; control = 0, 0) at step

two, with the interactions of condition by fluency added at step three (controlling for pre-well-being in all steps) was run, to determine whether fluency may have played an important role in any of the conditions specifically – regardless of the fact that there were no main effect differences. The relationship between fluency ($\beta = -0.26, p = .003$) and gratitude at step one was significant ($R^2 = .306, p < .001$), indicating that the more difficult participants reported the task being, the less they endorsed gratitude. The relationship between condition and gratitude at step two was not significant ($\Delta R^2 = .030, p = .113$), nor was the relationship between interaction and gratitude at step three ($\Delta R^2 = .004, p = .741$) – these effects are not examined further (see Table 4 for a breakdown of this regression).

Subjective Well-Being

Next the extent to which participants' SWB differed as a function of condition was examined. An ANCOVA revealed a significant difference in SWB across condition, $F(2, 101) = 4.10, p = .019, \eta^2 = .075$. Similar to the findings in Study 1 and consistent with expectations, post-hoc analyses (Fisher's LSD) indicated significant differences in SWB between participants in both the list-3 ($M_{diff} = 1.02, 95\% \text{ CI } [0.27, 1.77], p = .008$) and list-12 ($M_{diff} = 0.91, 95\% \text{ CI } [0.14, 1.67], p = .021$) conditions compared to those in the control condition, such that participants in the two gratitude conditions reported greater SWB than those in the control condition. No differences were found between the two gratitude conditions (see Table 3 for means). Thus, consistent with expectations, completing a gratitude task (either list-3 or list-12) compared to a control was associated with greater SWB. However, contrary to predictions, those in the list-3 (easy) condition did not report higher SWB than those in the list-12 (difficult) condition.

Again, the same linear regression was run regressing SWB on fluency at step one, condition (list-3 = 1, 0; list-12 = 0, 1; control = 0, 0) at step two, adding the interactions of condition by fluency at step three (controlling for pre-well-being in all steps). The relationship between fluency ($\beta = -0.02$, $p = .704$) and SWB at step one was not significant ($R^2 = .524$, $p < .001$). However, the relationship between condition and SWB at step two was significant ($\Delta R^2 = .037$, $p = .018$); both the list-3 (easy; $\beta = 0.23$, $p = .008$) and list-12 (difficult; $\beta = 0.20$, $p = .016$) condition variables were associated with increased SWB compared to the control condition. Further, the effect of interaction on SWB at step three was significant, ($\Delta R^2 = .032$, $p = .025$; see Table 4 and Figure 2) and is examined below.

Examining the simple effects indicated that when the task was found to be subjectively easy (1SD below the mean), both the list-3 ($\beta = 0.37$, $p = .001$) and the list-12 ($\beta = 0.38$, $p = .001$) conditions exhibited significantly greater SWB than those in the control; and the two gratitude conditions did not differ from one another in terms of reported SWB ($p = .869$). However, when the task was experienced as subjectively difficult (1SD above the mean), SWB across all conditions did not differ (all $ps > .756$). Further, simple slopes analyses indicated that as subjective feelings of difficulty associated with the gratitude task increased, reported SWB decreased marginally in the list-12 (difficult) condition ($\beta = -0.21$, $p = .070$), and increased marginally in the control condition, ($\beta = 0.21$, $p = .080$). However, subjective fluency did not impact SWB in the list-3 (easy) condition ($p = .179$).

Discussion

Contrary to expectations, and findings from the previous study, the two gratitude manipulations did not differ in regards to experienced difficulty, and the list-12 task was only reported to be marginally more difficult than the control task. As in the previous study, the mean

rating of difficulty for the list-12 condition rested just below the midpoint – suggesting that the task was still not experienced as overly difficult on average. Given this, it is perhaps not surprising that the anticipated fluency effect was not found at the level of condition for either gratitude or SWB – when directly comparing the list-3 and list-12 conditions, no differences were found in terms of reported gratitude or SWB.

Although the task itself did not get any harder – in fact it may have even become slightly easier by removing the *why* portion – subjective feelings of difficulty were expected to rise (specifically in the list-12 condition) in response to the creation of the explicit expectation that the task ought to be experienced as relatively easy. Intentionally highlighting the supposed ease typically experienced during completion of the task was intended to cause participants' phenomenal experience to become more salient and as a result be used as diagnostic information. However, it is possible that this expectation of ease may not have been inconsistent enough with participants' actual experiences to trigger the anticipated comparison – especially given the mean level of experienced difficulty in the list-12 condition was relatively low.

Manipulated difficulty may not have had the impact that was anticipated but subjective feelings of difficulty were associated with both reported gratitude and SWB; specifically, subjective feelings of difficulty were associated with decreased gratitude and lower SWB across conditions. Further participants who completed either the list-3 or list-12 gratitude tasks reported significantly greater SWB than participants in the control condition; however, this condition effect was moderated by fluency (see Figure 2). Participants who reported relative ease when completing either gratitude task reported higher SWB than those who completed the control, but when participants experienced greater difficulty in completing either gratitude task, reported levels of SWB were similar to those reported in the control condition – suggesting that gratitude

tasks may only provide benefit when the task is experienced with relative ease and are (at best) no better than a control when they are found to be difficult. Although not significant in the list-3, and marginal in the list-12 condition, the pattern of results displayed in the interaction of condition and fluency suggests a downward trend in SWB for the gratitude conditions from high to low fluency – in other words, as the gratitude tasks began to feel more difficult, they lost their positive impact. The slope of the control condition however remained flat – suggesting that subjective fluency in the control condition was unrelated to SWB.

Included in the instructions for the manipulation of gratitude for Study 2, was a line indicating to participants that this task has “been shown to increase happiness and well-being”. The inclusion of this line was intended to elicit expectations from participants that would more accurately reflect expectations people engaging in these types of tasks outside of the lab would hold regarding their anticipated effectiveness. This line may potentially have acted as a demand characteristic for participants – that is, they may have responded favourably to measures of well-being because they felt they should. As such, the notion that a placebo or demand effect may have increased the effectiveness of the intervention ought to be kept in mind when considering the results presented here. Given the purpose of this research was examine what is likely to be happening with gratitude tasks in the real world however, the line regarding expectations surrounding the task is retained in all remaining studies.

It is important to note that in Study 2, very little movement was found to occur regarding gratitude as an outcome variable. The regression analysis indicated that the list-12 condition was associated with greater endorsement of gratitude; however, mean level comparisons examining condition differences alone yielded a null result. Although it seems intuitive that an activity labeled as a gratitude intervention which instructs participants to list things for which they are

grateful ought to have some impact on a gratitude outcome variable, there are a few reasons why we are not seeing a great deal of movement on gratitude as a dependent variable.

A great deal of work examining the effectiveness various gratitude interventions has focused more on well-being in a broader manner (satisfaction with life, general positive affect or mood, SWB) rather than directly assessing gratitude itself as an outcome measure (e.g., see Davis et al., 2016 for a review); given this, it is not surprising that in the present work SWB is where the majority of the action is occurring. However, that is not to say that gratitude itself has not been used as an outcome measure. Gratitude is often examined as a state level outcome measure – typically by creating a composite of *grateful*, *thankful*, and *appreciative* (e.g., Emmons & McCullough, 2003; McCullough et al., 2004). In the present work however, the measure of gratitude may have captured more of the dispositional or trait – rather than state – levels of gratitude (McCullough et al., 2002). Affective traits are thought to reflect stable predispositions and enduring aspects of personality that are consistent across contexts and over time (Rosenberg, 1998). As such, given that the gratitude interventions used in the present work involve a one-time short-term practice of gratitude, they may not be powerful enough to shift dispositional levels of gratitude. However, to remain consistent across all studies, and to prevent changing too many factors in the overall design (in order to better assess the impact of the gratitude manipulation), the Gratitude Questionnaire (McCullough et al., 2002) will continue to be used throughout.

Given that in the present study no differences were reported in terms of difficulty between the conditions – and thus it would not have been possible to elicit a manipulated fluency effect – the main aim of Study 3 was to further alter the gratitude manipulation in such a manner

that the difficult task was in fact experienced as harder than the easy task, so that the true effects of fluency might be more readily examined.

Study 3

Method

Participants

A total of 147 CrowdFlower workers completed this study in exchange for \$0.50US. As with the previous studies, participants who failed the attention check and/or responded inappropriately to the gratitude manipulation were removed from the analytic sample (Meade & Craig, 2012). In total 20 participants were removed leaving a total of 127 (female $N = 58$) participants for use in data analyses. The mean age of participants was 32.72 ($SD = 11.12$).

Procedure

Participants self-selected to complete the study (entitled: *Recalling Gratitude*) online via the CrowdFlower platform. Restrictions were set such that CrowdFlower workers who had participated in the previous studies were not eligible to participate in the present study. The method utilized in this study followed the same sequence as the previous studies with a change to the manipulation of gratitude used (detailed below).

Pre-measures. The pre-measure of well-being ($\alpha = .87$) used in this study was the same as in the previous studies.

Gratitude manipulation. Participants were randomly assigned via Qualtrics to one of three conditions (two gratitude conditions and one control) when they began the study. Participants in the two gratitude conditions were given instructions very similar to those used in the previous studies with some notable changes. Firstly, participants were specifically asked to think of instances in which they had felt *profound gratitude*. Profound gratitude was defined for

participants as: "...aspects of one's life that give it meaning, great purpose, and broad significance... these feelings are centrally tied to the depths of one's being, going far beyond what is superficial or external." Further, given the anticipated difficulty of recalling instances of gratitude that fit the definition provided (i.e., profound gratitude), the number of instances participants were asked to recall was adjusted such that the easy condition had participants list-2 and the difficult condition had participants list-10 instances of profound gratitude. Participants in the control conditions completed the same task as in Study 2, with the only change being that they completed 10 items instead of 12 – to parallel the number of responses required in the difficult gratitude condition.

Post-measures. The post-measures used were the same as in the previous pilots: Satisfaction with Life ($\alpha = .93$), GAS (PA: $\alpha = .94$, NA: $\alpha = .94$) – combined to form SWB ($\alpha = .92$ for the difference score) – and Gratitude ($\alpha = .81$).

Results

Initial Well-Being

As in the previous studies, prior to conducting further analyses, participants' degree of well-being at the outset of the study was examined. An ANOVA assessing pre-well-being across conditions indicated that there were no significant differences between the list-2, list-10, and control conditions at the outset of the study, $F(2, 124) = .22, p = .803$. All results presented control for the effect of pre-well-being.

Manipulation Check – Degree of Felt Fluency

An ANCOVA was conducted examining participants' rated degree of felt fluency across conditions. Contrary to expectation (see Table 5 for means), there were no significant differences in felt fluency across conditions, $F(2, 124) = 2.20, p = .115$. Although the omnibus ANCOVA

did not indicate significant differences across condition, conditions were still examined to determine whether any differences existed within the manipulation check. Post-hoc analyses (Fisher's LSD) indicated that the list-10 condition was rated as significantly more difficult than the control condition ($M_{diff} = 1.22$, 95% CI [.06, 2.38], $p = .039$). No other differences were found.

Gratitude

As with the previous studies, the degree to which feelings of gratitude differed as a function of condition was examined. Again, contrary to expectations an ANCOVA revealed no significant differences between conditions in terms of gratitude, $F(2, 123) = 1.81$, $p = .169$ (see Table 5).

However, to further probe this finding, the same linear regression conducted in the previous studies, regressing gratitude on fluency at step one, condition (dummy coded: list-2 = 1, 0; list-10 = 0, 1; control = 0, 0) at step two, with the interactions of condition by fluency added at step three (controlling for pre-well-being in all steps) was run (see Table 6). The relationship between fluency ($\beta = -0.36$, $p < .001$) and gratitude at step one was significant ($R^2 = .327$, $p < .001$), such that finding the task to be difficult was associated with decreased gratitude. The effect of condition on gratitude at step two was significant ($\Delta R^2 = .036$, $p = .035$). However, only the list-2 condition showed an effect: participants in the list-2 condition (easy; $\beta = 0.22$, $p = .010$) reported significantly higher gratitude than those in the control condition. The relationship between interaction and gratitude at step three was not significant ($\Delta R^2 = .020$, $p = .146$), as such the interactions were not examined further.

Subjective Well-Being

Next the extent to which participants' SWB differed as a function of condition was examined. An ANCOVA did not reveal any significant differences in SWB scores across condition, $F(2, 123) = 2.25, p = .109$. See Table 5 for means.

Regardless, the same analysis regressing SWB on fluency at step one, condition (list-2 = 1, 0; list-10 = 0, 1; control = 0, 0) at step one, with the addition of the interactions of condition by fluency at step three (controlling for pre-well-being in all steps) was conducted. The relationship between fluency ($\beta = -0.13, p = .008$) and SWB at step one was significant ($R^2 = .708, p < .001$), indicating that finding the task to be difficult was associated with lower SWB. The effect of condition on SWB at step two was significant ($\Delta R^2 = .016, p = .036$)⁶; participants in the list-2 condition significantly ($\beta = 0.14, p = .014$) and list-10 condition marginally ($\beta = 0.11, p = .058$) reported higher feelings of reported SWB than those in the control condition. However, the relationship between interaction and SWB at step three was not significant ($\Delta R^2 = .008, p = .181$; see Table 6 and Figure 3 for the pattern of the interaction) and as such is not examined further.

Discussion

Once again, although felt fluency varied somewhat across conditions, the mean fluency rating in the list-10 (difficult) condition rested below the midpoint on the scale – suggesting that overall participants were not finding the task to be particularly difficult. Further, although participants in the list-10 condition reported greater feelings of subjective difficulty than participants in the control condition, no differences in experienced fluency were reported

⁶ This effect becomes marginal when the state gratitude items are removed from SWB ($\Delta R^2 = .011, p = .076$). The list-2 variable retained a significant effect compared to the control, $\beta = 0.12, p = .029$, but the list-10 variable became non-significant, $\beta = 0.09, p = .105$.

between the list-2 (easy) and list-10 (difficult) conditions – meaning the gratitude condition that was intended to be “hard” was no more difficult than the “easy” gratitude condition.

Regardless, although manipulated difficulty did not appear to elicit the anticipated effects, subjective feelings of difficulty once again played an important role – this time for both gratitude and SWB. Regression analyses indicated that participants who completed the list-2 gratitude activity reported significantly greater gratitude and SWB, and those in the list-12 condition reported significantly greater SWB, than participants in the control condition. However, subjective feelings of difficulty were associated with decreased gratitude and lower SWB across conditions. Fluency has been found to have a significant association with well-being at a main effect level rather consistently across all three studies thus far.

It is possible that feelings of low fluency are being perceived as a general sense of negativity by participants (feelings of difficulty are not often experienced as positive), and this overall negativity may have biased how participants responded to the well-being measures across conditions. That is, simply feeling poorly in general may have been reflected in participants’ subsequent ratings of other factors that are related to well-being (gratitude and SWB; e.g., Davis et al., 2016). Supporting this notion, in the present work, the pre-measure of well-being has consistently exerted a significant effect as a covariate across all analyses in all studies; how individuals feel at the outset of the study, has a significant association with how they feel post-manipulation.

Well-being was measured at the beginning of each study using three items that were intended to reflect a variety of components that are theorized to compose well-being (i.e., current mood, general disposition, and life satisfaction; e.g., Diener et al., 1999; Seligman et al., 2005), without being overly onerous for participants. However, it is possible that this short measure

consisting of current feelings of happiness, general disposition of happiness, and overall life satisfaction was unable to capture all of the variation present in pre-well-being; as a result the measure of fluency may not have only captured momentary difficulty with the task itself, but may have acted as a proxy for the leftover variation in pre-well-being to some extent. Thus, it is possible that a significant effect of fluency is captured across conditions, in part, because it is conflated with well-being.

However, as stated previously, it is also plausible that subjective fluency reflects two distinct underlying processes in the gratitude and control conditions. The qualifying information provided by subjective feelings of fluency in the gratitude conditions is theorized to be directly related to the outcome variables of gratitude and SWB in a rather heuristic manner. That is, finding it rather effortless to list-2 (or 10) things one is profoundly grateful for, is likely to inform self-judgments of being grateful and highly functioning (i.e., high SWB) as the constructs are explicitly directly related. Finding it difficult to correctly identify words in a sentence – although it may provide some self-referential information – is theoretically unrelated to the constructs of interest. Thus, the route through which fluency influences well-being is suggested to be different across conditions. In the gratitude conditions feelings of fluency plausibly provide direct diagnostic information regarding the measures at hand (i.e., “gratitude is hard, I am not grateful”), but in the control condition feelings of fluency reflect a more general feeling of negativity that is extrapolated to the outcome measures of interest (i.e., the participant feels badly because the task was difficult, and this colours their response to measures of well-being).

Discussion – Manipulated Fluency across Three Studies

The results from the previous three studies provided good support for our first hypothesis – namely that engaging in a gratitude activity is associated with increases in well-being.

Specifically, participants who engaged in a gratitude activity (intended to be easy or difficult) reported greater SWB (consistently), and higher gratitude (though somewhat less consistently) compared to participants who completed a control task. This appears to be relatively good news – having individuals engage in gratitude interventions is consistently associated with an overall positive impact. This conclusion however, should not be accepted without some degree of caution. Because participants in two of the three studies presented thus far were informed that the task was intended to increase happiness and well-being (Studies 2 and 3), it is possible that at least some participants reacted to this suggestion as a demand characteristic. Given how consistently previous research has shown gratitude activities to be effective (e.g., Emmons & McCullough, 2003; Seligman et al., 2005; see Davis et al., 2016 for a review), and that including this information makes the tasks (and their expectations) more ecologically valid, concluding they are beneficial does not seem to be a reach. Regardless of the potential benefits seemingly conferred by these activities, some issues were brought to light when examining the impact of fluency.

Across three studies, several attempts were made to test the role that fluency played in a gratitude exercise involving listing things for which individuals feel grateful. In each of the three studies, efforts were made to ensure that the gratitude manipulations were designed to reflect either an easy (list-3/list-2) or difficult (list-12/list-10) version of the task. There was some minimal success at manipulating perceived difficulty; specifically, the easy gratitude condition (list-3) in Study 1 was rated as easier than the difficult gratitude condition (list-12). This difference in manipulated fluency however, did not translate into differences in reported gratitude and SWB. Further, in Studies 2 and 3, the easy and hard gratitude conditions did not significantly differ from each other in terms of reported fluency.

Contrary to expectations and despite our efforts, fluency was not manipulated as anticipated; even when the difficult gratitude task was rated as significantly harder than the easy gratitude task, it was not reported as overly difficult. In fact, the mean level of fluency for both gratitude conditions in all the studies presented thus far rested right around the mid-point. It may simply be that for the fluency effect to have a significant impact, the majority of people in the difficult condition would need to find the task to be rather challenging – i.e., with mean ratings closer to the top end of the scale. Indeed, in past work assessing the role of processing fluency (e.g., Schwarz et al., 1991), the mean rating of fluency of the difficult condition has been much closer to the top of the scale (e.g., $M = 7.2$ and $M = 7.4$ on a 10-point scale; Study 1 and Study 2 respectively).

It is further possible that participants did not interpret feelings of difficulty in completing these gratitude activities as important diagnostic information for making self-relevant judgments of well-being. However, given the role that individual differences in experienced (as opposed to manipulated) fluency played this is less likely. Results provide support for the notion that to the extent that participants experienced difficulty in completing their assigned gratitude task, they reported lower gratitude and SWB. Indeed, the pattern of results obtained suggests that finding the gratitude task to be more difficult mitigated the positive impact of the task itself. That is, when the task was felt to be relatively easy participants reported greater SWB than the control condition (Study 1, 2, and 3), but as the task began to feel subjectively difficult, participants' SWB ratings fell to the same levels as those who has completed the control task (Study 2 and 3). It would appear that people's individual reactions to the gratitude activity – with some finding it easy or difficult regardless of the manipulation used – were more powerful than the effect of the manipulation. Regardless of which gratitude task participants were assigned, their subjective

ratings of fluency (but not manipulated fluency) were consistently associated with subsequent well-being measures (though this also occurred in the control).

In considering what steps to take next, we identified two possibilities. One route would be to continue to try to manipulate difficulty. Although it seemed feasible to continue and try to create a gratitude task that almost everyone would find difficult (e.g., “List 50 instances of gratitude from the past day”), an extremely difficult task might push the limits of participants’ willingness to engage, limit ecological validity by moving further away from what people would encounter in real life if they were to seek out these activities, and also be less theoretically sound. In order for individuals to rely on their phenomenological experience as diagnostic information, they must spuriously attribute their feelings of difficulty as reflective of a characteristic of the self. Making the task overly difficult increases the likelihood that participants will attribute difficulty to the task at hand instead of being diagnostic of a self-relevant deficit – i.e., “It was not my fault I did poorly, that task was just too difficult for anyone to do well”. Having participants list 10 instances in which they experienced profound gratitude was already beginning to push the bounds of what types of gratitude activities are recommended or readily available, as such, we decided to pursue a different approach. Rather than trying to make the task more difficult (heightening the effect of fluency), we shifted our focus toward attempting to dampen or eliminate the negative impact of task difficulty. That is, the research questions of interest became: for those who find the gratitude task to be difficult, can the negative effect be attenuated, thereby allowing them to benefit even when the task is experienced as difficult?

To achieve this goal, we dropped the easy (list-2) condition, instead focusing only on the difficult (list-10) condition of Study 3. We observed that in Study 3 the list-10 condition was not associated with increased gratitude or well-being. Although effects were not clear across

conditions, the lack of effect on gratitude and SWB may have been due to the important role fluency plays as a potential boundary condition in the effectiveness of gratitude interventions. The list-10 condition was found to be significantly more difficult than the control – suggesting that this condition may be a reasonable starting point for attempting to mitigate the negative impact of subjective fluency. In Study 4 we attempt to attenuate the effect of fluency by directly addressing feelings of fluency in one condition prior to engaging in the gratitude activity. In order to normalize feelings of fluency (regardless of what was experienced) participants will first be informed that some individuals find the task to be easy and others find the task to be difficult. After which, they will be informed that these feelings of subjective fluency are irrelevant and what is important for increasing well-being is simply completing the task itself. In the other gratitude condition (also the difficult list-10), participants will not receive this information and will complete the intervention as normal. In order for feelings of fluency to have an effect on relevant outcome variables, participants must not be able to attribute feelings of difficulty to another source and view them instead as providing diagnostic information regarding their self-ratings (e.g., Schwarz et al., 1991). Thus, explicitly highlighting that individuals have differing experiences of ease but that this information is not informative may be a viable means through which to disrupt the fluency process.

Study 4

Method

Participants

A total of 262 Wilfrid Laurier University students completed this study in exchange for course credit. Eighteen participants were removed from the final analytic sample for failing the attention check and/or responded with gibberish to the gratitude manipulation (Meade & Craig,

2012) leaving a total of 244 (female $N = 167$) participants for use in data analyses. The mean age of participants was 19.78 ($SD = 7.18$).

Procedure

Participants self-selected to complete the study (entitled: *Gratitude in Everyday Life*) through the SONA system. Participants completed the study online. The method utilized in this study followed the same sequence as the previous studies with a change to the manipulation of gratitude used (described below).

Pre-measures. The pre-measure of well-being ($\alpha = .82$) used in this study was the same as in the previous studies.

Gratitude manipulation. Participants were randomly assigned via Qualtrics to one of three conditions (two gratitude conditions and one control) when they began the study. Both gratitude conditions required participants to list 10 events in their life for which they felt a sense of profound gratitude. In the normal gratitude condition participants were not given any information regarding difficulty of the task or what that might mean and were just informed that the “task has been shown to increase happiness and well-being”. Participants in the hard-is-okay gratitude condition however, were informed: “...some people find [this task] quite easy and other people find [it] to be rather difficult. However, whether the task seems easy or difficult doesn’t matter, what’s really important is taking the time to actually do it. Just doing this task has been shown to increase happiness and well-being”. Participants in the control condition received an identical task to the one used in Study 3.

Post-measures. The post-measures used were the same as in the previous studies: Satisfaction with Life ($\alpha = .88$), GAS (PA: $\alpha = .92$, NA: $\alpha = .91$)- combined to form SWB ($\alpha = .88$ of the difference score) – and Gratitude ($\alpha = .80$).

Results

Initial Well-Being

As with the studies, prior to conducting further analyses, the extent to which participants differed on their pre-well-being at the outset of the study was assessed. An ANOVA comparing pre-well-being across conditions indicated that there were no significant differences between the normal, hard-is-okay, and control conditions at the outset of the study, $F(2, 241) = .212, p = .123$. Regardless, as in the previous studies, all results presented control for the effect of pre-well-being.

Degree of Felt Fluency

An ANCOVA was conducted examining participants' rated degree of felt fluency (i.e., ease/difficulty) across conditions. As shown in Table 7, there was a significant difference in fluency across conditions, $F(2, 240) = 38.62, p < .001, \eta^2 = .244$. Post-hoc analyses (Fisher's LSD) indicated that the normal ($M_{diff} = 2.68, 95\% \text{ CI } [1.98, 3.38], p < .001$) and hard-is-okay ($M_{diff} = 2.69, 95\% \text{ CI } [1.98, 3.40], p < .001$) gratitude conditions were significantly more difficult than the control condition; the two gratitude conditions however did not differ from one another in terms of difficulty. The gratitude manipulation was not anticipated to impact fluency per se, but rather to impact how fluency related to well-being outcomes, and this is assessed below.

Gratitude

As with the previous studies, the degree to which feelings of gratitude differed as a function of condition was examined. An ANCOVA revealed no significant differences between conditions in terms of gratitude, $F(2, 240) = .25, p = .781$ (see Table 7 for means). Thus, at a condition level, the effect of the hard-is-okay manipulation did not have the predicted effect.

Regardless, to assess whether fluency may have played a role in any condition specifically, the same analysis regressing gratitude on fluency at step one, condition (normal = 1, 0; hard-is-okay = 0, 1; control = 0, 0) at step two, with the addition of interactions of condition by fluency at step three (controlling for pre-well-being in all steps) was conducted. The relationship between fluency ($\beta = -0.20, p = .001$) and gratitude was significant ($R^2 = .177, p < .001$), indicating that finding the task to be difficult was associated with decreased gratitude. The effect of condition on gratitude at step two was significant ($\Delta R^2 = .025, p = .024$); the normal ($\beta = 0.17, p = .022$) and hard-is-okay ($\beta = 0.18, p = .012$) gratitude conditions were associated with greater feelings of gratitude compared to the control. However, the relationship between interaction and gratitude at step three was not significant ($\Delta R^2 < .001, p = .982$), and as such was not examined further (see Table 8 for a full breakdown of this regression). Thus, as anticipated, engaging in a gratitude task does indeed lead to greater feelings of gratitude than completing a control task did. However, feelings of fluency still played an important role in all conditions – indicating to participants that feelings of ease or difficulty were important did not lead to differences in gratitude between the normal and hard-is-okay gratitude conditions as expected.

Subjective Well-Being

Next the extent to which participants' SWB differed as a function of condition was examined. An ANCOVA revealed significant differences in SWB across condition, $F(2, 239) = 4.04, p = .019, \eta^2 = .033$.⁷ Post-hoc analyses (Fisher's LSD) indicated that participants in the normal ($M_{diff} = 0.67, [0.17, 1.16], p = .008$) and hard-is-okay⁸ ($M_{diff} = 0.53, [0.03, 1.03], p = .036$) gratitude conditions reported significantly higher SWB than participants in the control condition. No differences were found between the two gratitude conditions (see Table 7 for

⁷ This effect became marginal when the state gratitude items were removed, $F(2, 239) = 2.64, p = .073$.

⁸ When the state gratitude items were removed from the measures of SWB the hard-is-okay gratitude condition did not differ from the control ($M_{diff} = 0.40, 95\% \text{ CI } [-0.11, 0.90], p = .121$).

means). Contrary to predictions, the hard-is-okay condition was not associated with greater SWB than the normal gratitude condition.

The same analysis regressing SWB on fluency at step one, condition (normal = 1, 0; hard-is-okay = 0, 1; control = 0, 0) at step two, with the addition of the interactions of condition by fluency at step three (controlling for pre-well-being in all steps) was conducted. The relationship between fluency ($\beta = -0.02$, $p = .680$) and SWB was not significant at step one ($R^2 = .453$, $p < .001$). However, the effect of condition on SWB at step two was significant ($\Delta R^2 = .027$, $p = .002$). Participants in the normal ($\beta = 0.19$, $p = .001$) and the hard-is-okay ($\beta = 0.16$, $p = .005$) gratitude conditions reported greater overall SWB than those in the control condition. The relationship between interaction and SWB at step three was not significant ($\Delta R^2 = .007$ $p = .223$; see Table 8 and Figure 4) and thus was not examined further.

Discussion

Unlike the previous three studies, subjective fluency in Study 4 was only significantly related to gratitude (and not SWB). Participants who experienced the task at hand as difficult reported lower levels of gratitude, but exhibited no significant differences in SWB. This first attempt at mitigating the negative impact of experiencing subjective difficulty by highlighting the importance of simply engaging in the gratitude task regardless of how easy or difficult one found the task to be, did not eliminate the effect of subjective fluency on gratitude, and could not be assessed regarding SWB, because the relationship between fluency and SWB was not significant.

Participants in both gratitude conditions experienced the task as more difficult than the control, and both exhibited greater SWB than the control, but no differences in fluency or SWB were found between the two gratitude conditions. It was anticipated that drawing participants'

attention to their subjective experience of difficulty, and labeling that experience as unimportant diagnostically, would prevent them from relying on the experience of felt fluency when making self-relevant judgments. Unfortunately, this did not appear to be the case. Attempting to have participants ignore, or not take into account, feelings of difficulty when making judgments regarding their well-being proved to be ineffective. Engaging in either gratitude task was found to be beneficial in terms of reported gratitude and SWB, but experienced difficulty still exerted a significant negative effect on gratitude across condition.

Given the failed attempt at mitigating the effect in fluency in the present study, in Study 5 we employed an alternative strategy – namely, to highlight difficulty as a meaningful feeling, but in a positive manner. If individuals are informed that experiencing difficulty while completing the task indicates that the task was taken more seriously and was representative of more meaningful responding, they may be more likely to experience the positive benefits of gratitude rather than the negative impact of perceived difficulty. Previous work has suggested that when naïve theories regarding effort are activated or made applicable, difficulty takes on new meaning. For example, individuals have been shown to infer high quality of work from high effort (Cho & Schwarz, 2008), to view effort as leading to increased mastery, and to experience decreases in fluency as indicative of greater comprehension (Miele & Molden, 2010). That is, instead of difficulty being interpreted as indicative of a personal deficit, activating a different naïve theory regarding what difficulty infers, provides the opportunity for it to be interpreted as being indicative of a positive and meaningful experience.

Study 5

Method

Participants

A total of 300 workers from Amazon's Mechanical Turk (MTurk) completed the study (entitled: *Gratitude in Everyday Life*) in exchange for \$0.50US. As with previous studies participants who failed the attention check and/or responded inadequately to the gratitude manipulation were removed from all analyses. In total, eight participants were removed which left 292 (female $N = 191$) participants in the analytic sample. The mean age of participants was 32.87 ($SD = 12.88$).

Procedure

Participants self-selected to complete the study (entitled: *Gratitude in Everyday Life*) online via MTurk's platform. The method utilized in this study followed an almost identical sequence as the previous studies with one distinct change – participants responded to the manipulation check item immediately upon completion of the gratitude measure. This was done to accommodate the change made to the gratitude manipulation. More specifically, in one gratitude condition, after completing the gratitude task, participants received additional information regarding what feelings of difficulty reflected. To prevent this information from biasing their initial assessment of fluency, the fluency measure was presented directly following the gratitude manipulation but before the information regarding difficulty was provided. A full description of the changes made to the gratitude manipulation is detailed below.

Pre-measures. The pre-measure of well-being ($\alpha = .82$) used in this study was the same as in the previous pilots.

Gratitude manipulation. Participants were randomly assigned via Qualtrics to one of four conditions (two gratitude conditions, one active control, and one baseline control) when they began the study. Participants in both gratitude conditions received instructions identical to those of the list 10 condition in Study 3 – that is, in both gratitude conditions, participants were asked to list 10 life events or circumstances for which they felt a sense of profound gratitude. After rating the degree of difficulty they experienced regarding the gratitude activity, participants in the normal gratitude condition continued on to the remaining questionnaires. Participants in the hard-is-meaningful gratitude condition however, were told that their responses were being analyzed and were kept on a fictitious “analyzing” page for 10s to create the impression that some form of assessment was occurring regarding their responses to the gratitude task. After 10s had elapsed, participants were auto-advanced to a new screen which read:

We noticed that it took you quite a while to complete this activity. Typically, when someone takes longer to finish this activity, or when they find it to be difficult/harder to do, it indicates that they have taken the time to really think about their responses and have chosen the best responses possible for themselves. The time it took for you to complete this activity suggests that your responses are more meaningful.

After seeing this screen participants continued on to complete the remainder of the measures. Participants in the active control condition completed the same task as in Study 3, and participants in the baseline control completed no task before responding to the remaining measures. A baseline control was included in the present study as the control conditions included in Studies 1 through 4 have not always been as clear as desired because they have sometimes shown an effect of fluency – though typically a weaker effect when it does exist.

Post-measures. The post-measures used were the same as in the previous pilots:

Satisfaction with Life ($\alpha = .94$), GAS (PA: $\alpha = .91$, NA: $\alpha = .92$) – combined to form SWB ($\alpha = .87$ for the difference score) – and Gratitude ($\alpha = .86$).

Results

Initial Well-Being

Keeping with the previous studies, prior to conducting further analyses, the extent to which participants differed on their pre-well-being at the outset of the study was assessed. An ANOVA comparing pre-well-being across conditions indicated that there were no significant differences between the normal, hard-is-meaningful, active control, and baseline control conditions at the outset of the study, $F(3, 288) = .72, p = .541$. Regardless, as in the previous studies, all results presented control for the effect of pre-well-being.

Degree of Felt Fluency

An ANCOVA was conducted examining participants' rated degree of felt fluency – given that fluency could not be assessed in the baseline control, only the two gratitude conditions and the active control condition are included in the following analysis. As shown in Table 9, there was a significant difference in fluency across conditions, $F(2, 198) = 25.21, p < .001, \eta^2 = .203$. Post-hoc analyses (Fisher's LSD) indicated that the normal ($M_{diff} = 2.52, 95\% \text{ CI } [1.65, 3.40], p < .001$) and hard-is-meaningful ($M_{diff} = 2.70, 95\% \text{ CI } [1.85, 3.56], p < .001$) gratitude conditions were reported to be significantly more difficult than the active control condition. As expected, the two gratitude conditions did not differ from one another in terms of difficulty.

Gratitude

As with the previous studies, the degree to which feelings of gratitude differed as a function of condition was examined. An ANCOVA revealed no significant differences across all four conditions in terms of gratitude, $F(3, 287) = .40, p = .753$ (see Table 9 for means).

To assess whether fluency may have played a role in any condition specifically, gratitude was regressed on fluency at step one, condition (normal = 1, 0; hard-is-meaningful = 0, 1; control = 0, 0) at step two, with the addition of interactions of condition by fluency at step three (controlling for pre-well-being in all steps). As the baseline control condition did not include a measure of fluency, it was not included in this analysis. The relationship between fluency ($\beta = -0.28, p < .001$) and gratitude at step one was significant ($R^2 = .391, p < .001$), indicating that when the task was experienced as difficult, ratings of gratitude were lower. The effect of condition on gratitude at step two was not significant ($\Delta R^2 = .010, p = .184$), nor was the relationship between interaction and gratitude at step three ($\Delta R^2 = .006, p = .351$) – therefore they are not discussed further. A full breakdown of this regression can be found in Table 10.

Subjective Well-Being

Next the extent to which participants' SWB differed as a function of condition was assessed. An ANCOVA revealed significant differences in SWB across condition, $F(3, 287) = 5.80, p = .001, \eta^2 = .057$. Post-hoc analyses (Fisher's LSD) indicated that participants in the normal gratitude condition reported greater SWB than those in the baseline control ($M_{diff} = 0.70$, 95% CI [0.19, 1.19], $p = .007$). Further, those in the hard-is-meaningful condition reported significantly higher SWB than those in the baseline ($M_{diff} = 0.96$, 95% CI [0.48, 1.44], $p < .001$) and active⁹ ($M_{diff} = 0.58$, 95% CI [0.10, 1.06], $p = .018$) control conditions. A marginal

⁹ This difference becomes marginally significant when the state gratitude items are removed ($M_{diff} = 0.44$, 95% CI [-0.04, 0.93], $p = .074$).

difference was found between the two control conditions ($M_{diff} = 0.38$, 95% CI [-0.06, 0.82], $p = .090$), such that those in the active control exhibited marginally greater SWB than those in the baseline control. No differences were found between the two gratitude conditions (see Table 9 for means). Thus, consistent with predictions, the two gratitude conditions were associated with greater overall SWB than the control conditions; however, contrary to expectations, the hard-is-meaningful condition did not exhibit greater SWB than the normal gratitude condition.

SWB was regressed on fluency at step one, condition (normal = 1, 0; hard-is-meaningful = 0, 1; control = 0, 0) at step two, with the addition of the interactions of condition by fluency at step three (controlling for pre-well-being in all steps) – the baseline control condition was not included in this analysis because it did not include a measure of fluency. The relationship between fluency ($\beta = -0.15$, $p = .003$) and SWB at step one was significant ($R^2 = .551$, $p < .001$), indicating that finding the task to be more difficult was associated with decreased SWB. The effect of condition on SWB was significant at step two ($\Delta R^2 = .036$, $p < .001$). Participants in the normal ($\beta = 0.15$, $p = .005$) and the hard-is-meaningful ($\beta = 0.22$, $p < .001$) gratitude conditions reported greater overall SWB than those in the active control condition. Further, the relationship between interaction and SWB was significant at step three ($\Delta R^2 = .016$, $p = .020$; see Table 10 and Figure 3), and is explored below.

Examining the simple effects indicated that when the task was found to be subjectively easy, both the normal ($\beta = 0.29$, $p < .001$) and the hard-is-meaningful ($\beta = 0.24$, $p = .002$) gratitude conditions exhibited significantly greater SWB than those in the active control condition; the two gratitude conditions did not differ from one another in terms of reported SWB. On the other hand, when the task was experienced as subjectively difficult, the gratitude conditions did not differ from the active control in terms of SWB ($ps > .356$). Interestingly

however, participants in the normal gratitude condition did report marginally lower SWB than those in the hard-is-meaningful condition ($\beta = -0.12, p = .065$) when the task was experienced as difficult, suggesting some support for the prediction that indicating that difficulty was associated with meaning (hard-is-meaningful condition) would dampen the impact of felt fluency observed in the more traditional (normal condition) gratitude manipulation. However, the hard-is-meaningful effect did not entirely eliminate the role of fluency as simple slopes analyses indicated that as subjective feelings of difficulty associated with the gratitude task increased, reported SWB decreased significantly in the normal ($\beta = -0.29, p < .001$) and hard-is-meaningful ($\beta = -0.20, p = .021$) conditions. Fluency was not associated with feelings of SWB in the active control condition ($\beta = -0.03, p = .756$).

Discussion

Consistent with expectations (given that fluency was measured prior to the manipulation of meaning), the two gratitude manipulations did not differ in regards to experienced difficulty, and both the normal and hard-is-meaningful gratitude conditions were rated as significantly more difficult than the control task. As with the previous studies, the mean of difficulty for both gratitude conditions rested just below the midpoint – suggesting that the task was experienced as moderately difficult on average.

The main findings of the present study provided more support for the notion that engaging in the practice of gratitude has beneficial consequences for one's SWB. Specifically, participants in both the normal and hard-is-meaningful gratitude conditions reported greater SWB following the completion of the task than those in the baseline control condition. The hard-is-meaningful gratitude condition revealed the highest level of SWB and additionally differed

from the active control condition; it did not differ from the normal gratitude condition. However, the observed differences in SWB were moderated by feelings of subjective fluency.

When the task participants engaged in was experienced as being relatively easy, both gratitude conditions reported greater SWB than the control condition as expected. Of particular interest to Study 5 however, was the extent to which indicating that feelings of difficulty are meaningful would mitigate the negative impact of subjective fluency on reported well-being. It was expected that individuals who were in the hard-is-meaningful gratitude condition would report higher levels of SWB than the normal gratitude and active control conditions. However, when the gratitude task was experienced as difficult, SWB in both gratitude conditions dropped to levels on par with those reported in the active control – with the normal gratitude condition actually dipping below control levels (though not significantly). Importantly however, although both the normal and hard-is-meaningful gratitude conditions displayed negative slopes that reflected decreasing SWB scores as the gratitude activity was experienced as more difficult, the slope for the hard-is-meaningful gratitude condition was not as steep as the slope for the normal gratitude condition (as evidenced by their respective beta weights), and the normal gratitude condition exhibited marginally lower SWB than the hard-is-meaningful condition when the task was experienced as difficult. Taken together, these findings suggest a potential (though non-significant) dampening of the negative impact exerted by feelings of difficulty on individuals' SWB, which may potentially serve to mitigate the negative impact of subjective fluency on gratitude interventions making them more impactful and less potentially harmful for people who are seeking them out in hopes of becoming happier, higher functioning versions of themselves.

Meta-Analysis

The five studies presented here add to a continually expanding literature assessing gratitude as a PPI and have served to highlight the importance of a previously unexamined variable that may play a role in its effectiveness – namely subjective fluency. Although subjective fluency did moderate the effect of condition on SWB (Study 1, 2, and 5), such that when participants found the gratitude exercise to be easy they reported greater SWB than those in the control condition, when the task was experienced as difficult the gratitude and control conditions did not differ from one another. Although in Studies 3 and 4 the pattern of results obtained was similar to that obtained in the other studies, the interaction failed to reach significance. Further, the effect of fluency in the control condition was unclear across studies – the slope of fluency in the control condition was negative in Study 1, positive in Study 2, and flat in Study 5 (it also appeared flat in Studies 3 and 4 – but the interactions were not significant). Additionally, some of the studies presented here may have been relatively under-powered – especially in terms of being able to detect interactions (as the first studies were not designed anticipating an interaction to emerge). Thus, in order to better understand the effect of fluency as a moderator and assess the overall strength of the effects in the present studies, a series of meta-analyses were conducted. Specifically, we performed a meta-analysis of: (a) the effect of condition when the task was experienced as subjectively easy (1SD below the mean of fluency); (b) the effect of condition when the task was experienced as subjective difficult (1SD above the mean of fluency); and (c) the slope of fluency within the chosen gratitude and control conditions.

Method

The meta-analysis focused on conditions wherein participants did not complete the task with any additional manipulation procedures; which made the gratitude conditions included the

most directly comparable (i.e., the most similar). Further, the list-3 and list-2 conditions were not included as Studies 4 and 5 did not include comparable conditions. Hence, the analyses included the list-12 gratitude conditions from Studies 1 and 2, the list-10 gratitude condition from Study 3, the normal gratitude condition from Studies 4 and 5, and the control conditions from Studies 1-5.

To conduct the meta-analyses, we used the program Comprehensive Meta-Analysis (Version 2; Borenstein, Hedges, Higgins, & Rothstein, 2005) as suggested by Cumming (2014), using the effect size metric of Hedges' g (Hedges & Olkin, 1985). Effect sizes for the meta-analyses were calculated using t 's and cell n 's. All meta-analyses were conducted as random effects models, weighted by sample size.

Results

Gratitude versus control. The overall effect size for the difference in SWB between the gratitude and control conditions when the task was experienced as easy (i.e., 1SD below the mean) was moderate to large, Hedges' $g = 0.59$, 95% CI [0.42, 0.76], $z = 6.79$, $p < .001$. The overall effect size for the difference in SWB between the gratitude and control conditions when the task was experienced as difficult (1SD above the mean) was small and non-significant, Hedges' $g = 0.15$, 95% CI [-0.02, 0.31], $z = 1.70$, $p = .089$. See Appendix D for the forest plots of these analyses.

Slope of fluency. The overall effect size for the slope of fluency predicting SWB in the gratitude conditions was large, Hedges' $g = -0.70$, 95% CI [-0.97, -0.43], $z = -5.12$, $p < .001$. However, the overall effect size for the slope of fluency predicting SWB in the control condition was small and non-significant, Hedges' $g = -0.11$, 95% CI [-0.44, 0.22], $z = -0.66$, $p = .509$. See Appendix E for the forest plots of these analyses.

General Discussion

Past work has established the numerous and seemingly impressive benefits associated with the practice of gratitude in both the short- (e.g., Emmons & McCullough, 2003) and long-term (e.g., Seligman et al., 2005). Unsurprisingly, because of the simplicity and intuitive appeal of practicing gratitude, it has become almost ubiquitous with the lay positive psychological movement – pick up a self-help book written by anyone in the field (from *the* renowned positive psychology researcher who founded the field, Martin Seligman [e.g., 2002, 2011], or one of the most well-known happiness practitioners and teachers, Shawn Achor [e.g., 2010, 2013]) and an emphasis on the practice of gratitude will largely be present. Unfortunately, it seems that this prescription that gratitude is a sure route to greater well-being may potentially be premature.

Although there is a great deal of support for the notion that gratitude in and of itself, is related positively to physical (increased physical activity, better sleep, and less stress; e.g., Emmons & McCullough, 2003; McCullough et al., 2001; Wood, Maltby, Gillett, et al., 2008) and emotional health (greater likelihood of offering support to others, increased positive and decreased negative emotion; e.g., Overwalle, et al., 1995; Walker & Pitts, 1998), the majority of the work has focused on the way in which trait gratitude correlates with various measures of well-being. Those studies that examine the impact of the practice of gratitude on well-being through the use of interventions, have not really focused on where potential boundary conditions or moderating effects may exist. It is important to determine what these boundary conditions and moderating effects are, as it is only after these boundary conditions have been identified that they can begin to be addressed. Because the focus has been so largely on the positive, it seems that the general consensus is that not only is gratitude itself ultimately beneficial, but so are the interventions aimed at increasing it.

I did find some support for this viewpoint across the five studies presented here. Specifically, in all studies, engaging in a gratitude task – regardless of the number of instances recalled (i.e., many versus few), what types of experiences were required to be generated (i.e., simple and every day; profound), the expectations surrounding the outcome of the task (i.e., that it increases happiness and well-being; it is expected to be easy), or whether participants received additional diagnostic information (or not; i.e., experienced difficulty is not important, experienced difficulty represents meaning) – did lead to increases in overall SWB. As a whole, these findings support the notion that there is something inherently positive about the practice of gratitude (at the very least as an effective boost in the moment). However, in three of the five presented studies (Study 2, 4, and 5), trait gratitude was completely unaffected by a commonly used gratitude intervention framework. This finding (or lack thereof) at first glance appears to be rather counterintuitive.

Gratitude: Trait versus State

Examining the literature surrounding the use of gratitude interventions as vehicles of positivity, widely used dependent measures often revolve around positive and negative affect, satisfaction with life (affect and SWB can be combined – as in this series of studies – to create a composite measure of SWB), subjective happiness, and meaning in life (e.g., Diener, 1984; Diener et al., 1985, 1999; Seligman et al., 2005; Sheldon & Lyubomirsky, 2006; see Davis et al., 2016 for an overview). In the present work, the majority of the benefit acquired from engaging in a gratitude intervention appears to be expressed on the measure of SWB and not gratitude.

However, it should be noted that the measure of gratitude used in all studies of the present work represents gratitude as a trait disposition rather than an emotive state (McCullough et al., 2002). Given the notion that affective traits reflect stable predispositions and enduring

aspects of an individual's personality – that is, they reflect behavioural tendencies which are consistent across different contexts and over time (Rosenberg, 1998) – it is unlikely that the manipulations used in the present work were sufficiently powerful enough to create changes in trait gratitude.

Research regarding state gratitude on the other hand, does tell a different story. A number of studies have demonstrated that gratitude as an emotional state can be significantly impacted by simple activities like writing a gratitude letter, reflecting on blessings, and listing past experiences of gratitude (Algoe et al., 2010; Geraghty, 2010a, 2010b; Emmons & McCullough, 2003; Froh et al., 2009; Tsang, 2006, 2007) – suggesting that examining gratitude at a state level is of particular interest. Indeed, in the present work, if the three-item (i.e., *grateful*, *thankful*, and *appreciative*; Study 1 and 2) or two-item (i.e., *thankful* and *appreciative*; Study 3, 4, and 5) GAS state gratitude composite is examined (outside of the context of SWB), engaging in a gratitude task (regardless of type) compared to a control was associated with greater endorsement of gratitude at the trait level (see Appendix F for results from each of the studies individually). In the present work however, these trait level gratitude items were included in the measure of SWB as reflecting overall positive affect.

The typical gratitude as emotion measure used in previous work combines the items of *grateful*, *thankful*, and *appreciative* (interspersed among other items in the GAS) to create a composite measure often simply referred to as gratitude (e.g., Emmons & McCullough, 2003; Tsang, 2006). However, factor analyses of the GAS in the present studies (see Appendix G) provide consistent evidence of a simple two-factor solution: positive affect (including feelings of gratitude) and negative affect. This suggests that the gratitude specific items along with the other positive affect items underlie and represent more broadly feelings of positivity.

Overall, regardless of whether the outcome variable of focus is defined specifically as state gratitude or more broadly as SWB (which encompasses gratitude), there was a good deal of support across the five studies for the notion that engaging in a gratitude exercise is beneficial. It is important to conclude this with the caveat that in all of the studies presented here (with the exception of Study 1) participants were informed that the task they were about to complete had been found to increase happiness and well-being. Providing participants with this information may potentially have served as a demand characteristic to participants. That is, a placebo or demand effect may be responsible (at least in part) for the findings that indicate that the gratitude exercises are beneficial. However, that seems unlikely given that previous research has consistently provided evidence that gratitude activities are indeed effective (e.g., Emmons & McCullough, 2003; Seligman et al., 2005; see Davis et al., 2016 for a review). Further, the inclusion of this information makes the tasks (and their expectations) more ecologically valid. As such, concluding that the tasks are beneficial does not seem to be a far reach.

It would however, be useful for future research to systematically investigate the effectiveness of gratitude interventions (and other PPIs) with and without the promise of increased happiness and well-being being made explicit. Explicitly stating that the task is intended to increase well-being may heighten individuals' expectations to a level that would be very difficult to achieve in a short, one-time intervention. Further, the contrast of their expectations to the actual benefit received may lead them to undervalue their experience – and thus report lower levels of well-being. Thus, empirically examining the effect of these expectations would be beneficial.

Participants in the five studies exhibited higher well-being when they completed a gratitude task – even one that was designed to be experienced as incredibly difficult – than

participants in either active or simple baseline control conditions. Given the strong and consistent effects of condition in past work (Emmons & McCullough, 2003; Seligman et al., 2005; see Davis et al., 2016 for a review) and in the studies presented here, it is unsurprising that these types of activities have been heralded as holding great benefit. However, the purpose of this dissertation was not simply to replicate past work upholding the value of gratitude in practice, but rather to delve deeper and gain a better understanding of not just whether these activities work – but for whom they work best.

Fluency as a Boundary Condition

Across a wide variety of situations and tasks, individuals have been found to use experiences of fluency to inform subsequent interpretations and judgments (e.g., Aarts & Dijksterhaus, 1999; Haddock et al., 1996; McGlone & Tofigbakhsh, 2000; Novemsky et al., 2007; Schwarz et al., 1991; Winkielman et al., 1998). The effect of fluency was perhaps most notoriously captured in a series of studies conducted by Schwarz and colleagues (1991) which served to highlight the significant impact that perceived difficulty held. Specifically, when participants were asked to bring more (i.e., 12) examples of a type of behaviour to mind, they endorsed embodying the pertinent personality characteristic less than those who were asked to recall fewer (i.e., 6) examples – even though the content of their recall in the “more examples” condition had provided a greater foundation of evidence in favour of the personality trait in question. The mechanism underlying this seemingly contradictory effect is fluency; when something is experienced as (dis)fluent, the phenomenological experience provides diagnostic information to the individual that is subsequently used rather heuristically to inform judgments.

In the traditional fluency literature, feelings of difficulty as rated by participants have typically been used as a simple manipulation check. That is, researchers used this measure to

ensure that the condition which was intended to be difficult was indeed experienced that way, and then analyze the variance occurring between conditions without accounting for *subjective* fluency. In the present work, gratitude condition within studies did exhibit this intended effect to some degree. In Study 1, the *hard* gratitude condition did indeed feel significantly more difficult than the *easy* gratitude condition (thereby passing the manipulation check), but this difference in difficulty was not associated with related self-relevant judgements. Participants in the *easy* and *hard* conditions reported the same level of well-being after completing the task – indicating that although the manipulation was successful, it did not have the intended effect. Further, in Study 2 and Study 3, the *hard* gratitude condition was not reported as being more difficult than the *easy* gratitude condition (failing the manipulation check), and thus could not be related as anticipated to our main outcome variables. Given that the anticipated fluency condition effect did not emerge (even after multiple attempts), the role of *subjective* fluency (i.e., participants' own feelings of difficulty – not that ascribed by condition) was probed further. In doing so, a more complex view of fluency emerged.

Fluency rather ubiquitously was associated with participants' endorsement of well-being across conditions. The pattern of results obtained across studies suggests that regardless of whether individuals had (a) completed an easy or hard gratitude task, (b) been informed that their subjective experience of difficulty was to be expected and uninformative, or was meaningful, or (c) simply completed a control task – decreased feelings of fluency were associated with lower overall well-being. As evidenced by a relatively consistent main effect of fluency on gratitude (with the exception of Study 2) and SWB (with the exception of Study 2 and 4) across studies, simply finding a task to be difficult was negatively related to subsequent self-relevant judgments.

Feelings of disfluency, by and large, are experienced as reflecting a relatively negative state and thus act to provide diagnostic information to that effect (i.e., “If I feel badly there must be an internal reason why”; e.g., Cho & Schwarz, 2008; Schwarz et al., 1991; Song & Schwarz, 2008; cf. Michael et al., 2014). Feelings of disfluency exhibited a negative relationship with well-being in the present studies at a main effect level; given that these feelings would be reflected in a generalized negative state (as suggested above), that is not overly surprising. What we were particularly interested in was the effect that the task has above and beyond these feelings of (dis)fluency and generalized affect. At this point however, more research is necessary to understand what fluency truly is and how it is activated and experienced.

Individuals who are lower in well-being to begin with may be particularly likely to view everything through a negative lens, and as a result find tasks (even those that ought to be very simple) to be more difficult. In an attempt to control the potential effect of initial well-being in the present work, it was assessed (and statistically controlled for) using a three-item measure that captured current mood (i.e., happiness), and more stable traits of well-being (i.e., life satisfaction and general disposition). Even so, this measure was rather brief, and likely did not capture all of the relevant facets of well-being – leaving some variability in well-being that was not due to the manipulation itself unaccounted for. However, well-being that was not captured by the pre-measure would not be enough to account for the condition differences and interactive effects observed in the present work, as any unaccounted for initial well-being would be associated with outcomes in both the gratitude and control conditions.

For three of the five studies, a marginal (Study 1) or significant (Studies 2 and 5) interactive effect of condition by fluency on SWB emerged. However, the effect of fluency on SWB in the control condition in these studies was still unclear, as it was found to be negative

(Study 1), positive (Study 2), and flat (Study 5). To help elucidate the pattern of fluency's effect on SWB in the control condition, the interactions between fluency and condition in Studies 3 and 4 were probed in an exploratory manner. Although the pattern of results should be considered with caution given that the interactions themselves were non-significant, the slopes for the control condition in these two studies were flat ($\beta = -0.04, p = .616$ and $\beta = -0.04, p = .694$ respectively; see Figures 2 and 4) – indicating no relationship between difficulty and well-being for participants in the control condition. Further, the meta-analysis provided support for this notion; the effect of slope in the control condition was small and non-significant when comparing the standardized effect across all five studies. Thus, it seems reasonable to suggest that the main effect of fluency found in this work was being driven largely by the gratitude (and not control) conditions.

It is plausible that the control condition may have led participants to feel badly for a variety of other reasons – for example, they may have felt less competent or intelligent if they found the task to be difficult. In Study 5, a no-intervention baseline condition was included in order to determine whether the active control condition used throughout was having an unanticipated – and potentially negative – effect on well-being. The two control conditions did not exhibit any significant differences – if anything the baseline control was associated with marginally lower SWB than the active control. Unfortunately, in the frame of the present work, at this point a clear account of what is happening in the control condition cannot be established.

When the gratitude task (regardless of instructions, intended difficulty, etc.) was experienced with a great deal of fluency (i.e., it felt easy), participants in the gratitude conditions exhibited significantly greater well-being than the control (Studies 1, 2, and 5). However, when the task was experienced with a low degree of fluency (i.e., it felt difficult), participants in the

gratitude conditions reported similar levels of well-being as participants in the control condition (Studies 2 and 5). This pattern of results was also evident in the non-significant interactions of condition by fluency on SWB in Studies 3 and 4 (see Figures 3 and 4), and was additionally supported by the meta-analysis. Thus, the practice of gratitude does not always appear to be of benefit: if an individual finds the gratitude exercise to be difficult they at best do not reap the anticipated benefit. It seems that overall it would be prudent to exercise caution when prescribing gratitude activities as a happiness-boosting strategy – without bringing explicit and clear attention to their potential downsides. However, it is important to note, that all of the studies presented here were done over a very short period of time – the entire study session typically did not take longer than 30 minutes to complete. As such, in this work, we cannot suggest that these finding would be extrapolated to a longer-term intervention. In fact, it may well be that experiences of difficulty are important for enacting long-term, meaningful change. Lyubomirsky and colleagues (Armenta, Bao, Lyubomirsky, & Sheldon, 2014; Lyubomirsky et al., 2011; Sheldon & Lyubomirsky, 2012) have proposed a model highlighting important moderators to hedonic adaptation, aptly named the Hedonic Adaptation Prevention (HAP) model. Specifically, in order to achieve lasting gains in happiness, the HAP model asserted that individuals must experience a variety of positive events (as people readily adapt to constant stimuli; Lyubomirsky, 2011) and continued appreciation for the positive events in their lives (see Armenta et al., 2014 for a detailed overview). In addition, individuals are more likely to experience lasting gains in happiness when they are self-motivated to engage in activities that are associated with greater well-being and – of particular interest in the present work – put sustained effort into the practice of those activities (with the caveat that the activities engaged in are efficacious; see Lyubomirsky et al., 2011).

In regards to fluency, this suggests a potential positive benefit to experiencing difficulty. It is possible that engaging in PPI in an effortful manner would involve experiencing some degree of difficulty – at least over time. It is possible that when first engaging in a gratitude task like those used in the present work, feelings of fluency are reinforcing. That is, the results from this series of studies suggests that when the gratitude task is experienced as easy, it is associated with greater overall well-being. However, over time, continually engaging in a task that an individual finds to be particularly easy will likely not require much effort. As such, the initial positive benefits associated with the task may no longer occur. If that same task could be made more difficult for an individual once they have mastered its easier counterpart, this would require them to put in more effort to complete the task; and as such, may lead to continued benefit instead of adaptation (though this assertion still needs to be empirically evaluated). Research has suggested that the extent to which individuals continue to effortfully engaged with a gratitude PPI (in this case writing gratitude letters) is directly associated with more positive outcomes (Lyubomirsky et al., 2011); however, this link has not yet been empirically tested. Future research would do well to not only more thoroughly investigate and establish this link as causal, but also to examine and validate ways in which increasing difficulty (and as a result effort) can be accomplished using PPIs in real-time for those who are engaged in them outside of a therapeutic context.

Gratitude and Pre-Disposition

The express purpose of gratitude interventions, like those used in the present work, is to encourage individuals to notice and appreciate the good things in their lives, become increasingly aware of the positives surrounding them, and (eventually) to permanently boost overall well-being. According to the conductance hypothesis (McCullough et al., 2004), people who at a trait

level are disposed toward being grateful would be expected to be particularly responsive to, and reap the most benefit from, practicing gratitude. Via a cyclical and compounding process, dispositionally grateful people are expected to experience grateful emotion to a greater degree than those who are not dispositionally grateful when engaged in a gratitude task, and this increased feeling of gratitude is suggested to further inform and bolster their disposition. It is possible that this is due – in part – to their subjective experience with the task. Individuals who are predisposed toward gratitude are likely to find a gratitude task to be relatively easy, and these subjective feelings of ease are further likely to inform their interpretation of their experience completing the gratitude activity, which would subsequently be captured by a greater endorsement of well-being post-task. However, whether gratitude tasks provide a positive benefit to people who are already grateful is not only less theoretically interesting, but also less practically important.

It is likely that (at least a subset of) people who are seeking out self-help literature on happiness, or happiness boosting activities online, are those who are experiencing difficulty cultivating those emotions themselves. Although it has been theorized that people with depression may benefit the most from happiness boosting activities – because they have the most room for growth – it has also been suggested they are more likely to find these types of tasks to be difficult (e.g., Sin & Lyubomirsky, 2009). According to our work, this would mean people who are already struggling – those who are arguably the intended target group of these types in interventions – would be the least likely to derive their anticipated benefits. As such, a shift away from focusing on how beneficial gratitude is and toward making gratitude beneficial for the most people is necessary.

Mitigating the Impact of Fluency

In the present work this was attempted in two ways: by informing participants that people's experience of the gratitude task varies but what really matters is doing it (Study 4) and by informing them that the experience of difficulty indicates their responses are more meaningful (Study 5). Although neither of these approaches were able to fully ameliorate the effect of fluency (when the gratitude task was experienced as difficult participants still fared no better than the control), there was a small suggestion of potential in the meaningful condition. Specifically, although the hard-is-meaningful condition in Study 5 was associated with a significant and negative slope between fluency and SWB (i.e., as the task felt harder, SWB decreased), the slope of this condition was not as steep as the slope in the normal gratitude condition – providing some evidence of a potential dampening effect.

Although the hard-is-meaningful manipulation did not work as originally hoped, there is a potential explanation underlying why the manipulation was ineffective. Participants in the hard-is-meaningful condition were informed they had taken a long time to complete the task, and that this, in addition to subjective experiences of difficulty, were indicative of their responses being more meaningful. However, if participants had not taken the task seriously,¹⁰ they may not have incorporated the feedback provided into their judgments – because it seemed irrelevant to them – thereby potentially weakening the impact of the manipulation. It is possible that had participants received feedback regarding difficulty only if they had rated the task as relatively difficult (using the previous studies as a baseline), the hard-is-meaningful information may have had more impact.

¹⁰ Including time taken as a covariate in Study 5, did not alter the pattern of results obtained. Participants completed the study online. Thus, time taken may not have reflected time actually spent on the task itself but perhaps been indicative of participants taking a quick break, being distracted etc. – which would only serve to weaken the manipulation further.

Limitations of the Present Work

Although the approach used in the present work to assess the effectiveness and boundary conditions of a widely used gratitude intervention was reasonable, it is not without flaws. Firstly, in an attempt to truly assess the impact of fluency, the hard gratitude manipulations became increasingly difficult. A majority of the gratitude interventions used in past work (e.g., Emmons & McCullough, 2003) and found in the self-help literature (e.g., Achor, 2010) require individuals to list between 3 and 5 instances of gratitude. The hard conditions used here required either 12 typical instances or 10 *profound* instances of gratitude to be recalled, which may somewhat limit the ecological validity of the findings presented here. Given that participants did not find any of the interventions to be particularly difficult (even the list-10 profound manipulations were rated at mid-point), it seems that we did not exceed the bounds of reasonableness here. Further, as the fluency effect occurred across all conditions (including the list-3 condition) it is not inconceivable to suggest that the results obtained would occur in the real world, or with simpler interventions.

In addition, in attempting to strike an appropriate balance controlled research and the lay implementation of gratitude as a PPI, some concessions and compromises were made. We made the decision to shift focus from trying to create a gratitude intervention that would elicit the true fluency effect toward attempting to undermine or mitigate the negative impact that it consistently created. Either approach would have been reasonable – had we opted to continue trying to elicit the anticipated fluency effect, we may have been able to determine causality. That is, the potential for truly understanding why and how fluency consistently exerts an impact on well-being was there. We made a decision that kept more in line with the intended goals of our work – which were in part driven by needs in the industry. The ultimate goal from the perspective of

creating the most ethical and effective interventions possible had been from the outset to find ways to mitigate the negative effects of difficulty, and so given the lack of success in manipulating fluency, we chose to shift to this second research question. It is worth noting that the shift to the goal of mitigating the effects of fluency, as we attempted to do in Studies 4 and 5, can be investigated independent of a successful manipulation of fluency. It is entirely possible to mitigate the effects of felt difficulty as they naturally occur more in some individuals than in others – indeed, it may often be more vulnerable individuals (e.g., depressed, lower well-being) who find these tasks challenging and could benefit from instructions that reframe the meaning of experienced difficulty from a bad to a neutral or good thing.

Future Directions

Further research should seek to determine whether (and for whom) these types of gratitude interventions are beneficial in the long-term. Previous work (Seligman et al., 2005) has suggested that gratitude interventions were not beneficial (i.e., did not show increased well-being) compared to baseline measures at a one-week follow-up; but did not show significant improvements over the course of months. The present work indicated that gratitude interventions were beneficial immediately following their implementation – but there is some support in the present work that this is dependent on finding the task to be easy.

A long-term examination of the role fluency plays may help to pinpoint one manner in which its effects can be “undone”. Specifically, if these interventions become easier over time, a shift in focus toward encouraging people to continue in the face of difficulty would therefore be beneficial. If, however, feelings of fluency are not impacted through practice, this would be important knowledge regarding their use in the real world. It may be that some people treat a gratitude practice like any other skill practice – with the expectation that it will be challenging

but get easier over time. Others may be discouraged by initial difficulty and be less likely to continue or to put genuine effort into the practice. If these reactions are due in part to how they interpret the experience of difficulty, it may well be a mindset that is changeable. Further, from a purely theoretical perspective (and for active practice), continuing research in this area to probe and unpack the causal role of subjective fluency would be beneficial. Once the role of fluency is more sufficiently fleshed out, determining how to mitigate its negative impact may prove to be more fruitful.

The main findings of this work truly center on SWB as an outcome measure – very few results indicated that trait gratitude was impacted by these types of interventions. In subsequent iterations of this work, examining the difference between various types of gratitude interventions and their impact on trait gratitude may be of interest. The manipulations used herein (i.e., listing experiences of gratitude), are likely too weak to shift gratitude as a disposition in a single session. Further, the Gratitude Questionnaire (McCullough et al., 2002) is a broad, across-time assessment tool and thus to capture variability of any meaningful magnitude would require respondents to revise their impressions and memories of the past. As such, a different measure of trait gratitude that does not rely on revision of the past may better capture shifts dispositional shifts that occur in response to the practice of gratitude. In addition, a long-term study of the impact of these interventions may be useful. Having participants engage in the practice of gratitude over a longer period of time (a week or more), may make the practice of gratitude become more habitual, and thus less reliant on conscious engagement. As habits become further engrained, they require less self-regulation and effortful control over time, meaning that their practice becomes easier. Based on the results found herein, this experience of ease ought to be

translated into more positive outcomes resulting from the practice of gratitude. This habitual change in the practice of gratitude may also lead to shifts in dispositional gratitude.

It would also be fruitful to compare and contrast the types of gratitude interventions used in the present work with other established gratitude interventions, such as a gratitude letter or gratitude visit (e.g., Seligman et al., 1999). It would be useful to know which of these interventions, (a) has the strongest immediate impact, (b) is associated with the most long-term benefits, and (c) lends itself to continued practice. The person-gratitude activity fit may be of particular importance when fluency is considered. Some activities may be more difficult for some people to engage with and complete, and as a result, be less effective. It may be that a combination of gratitude activity types (or PPIs more generally), chosen intentionally instead of habitually, is of the most benefit (Sheldon & Lyubomirsky, 2009). The act of choice would allow an individual to select a task that fits their orientation at a given moment, and thus is possibly experienced more fluently.

Gratitude Interventions in the Real World: Consequences and Actions

Although it is admirable that positive psychology practitioners want to disseminate these potentially powerful interventions to the public, and not have them be hidden away in the ivory tower, or behind some paywall, the manner in which they have been distributed leaves considerable room for critique and improvement. Positive psychologists do not take the Hippocratic Oath, but we suspect they would stand firmly behind the promise to “first, do no harm”. However, part of “doing no harm” is investigating where the interventions they create and validate, fall flat. This can begin by determining where boundary conditions lie, and for whom these activities are not beneficial. Although we did not find evidence that gratitude interventions might lead some people to feel even worse than baseline, the pattern of findings

suggests this could be possible, especially if extrapolated to a more depressed population.

Further, even if interventions do not make people feel worse than a control, if the promise of well-being is consistently unmet, it could result in a cycle of false hope and self-blame (Polivy & Herman, 2002).

Our work focused specifically on the idea that not everyone was going to find these types of task to be easy, and knowing the potential implications feelings of difficulty may exert (e.g., Schwarz et al., 1991; Song & Schwarz, 2008), we began with a first step toward assessing the role fluency played. Experienced difficulty was consistently associated with lower well-being (relatively to experienced ease) in the present work, but did not appear to be “causing harm”. In terms of moderation, participants who found the gratitude tasks to be difficult typically reported levels of well-being similar to those in the control condition. Given that the thrust of the positive psychological movement was not to simply maintain the status quo, but to reach levels of flourishing and enhanced psychological well-being (Seligman & Csikszentmihalyi, 2000), this does not seem to be good enough. A number of PPIs have been created and are typically associated with promising outcomes; a shift now to a much more concentrated focus on making these interventions the most beneficial for the most people is the natural progression of the field.

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Appendix A

Inter-item Correlations among all Independent and Dependent Variables (all Studies)

Variables	1.	2.	3.	4.	5.	6.	7.
1. Pre-Well-Being	-	-	-	-	-	-	-
2. Subjective Fluency	-.291*** -.169 [†] -.151[†] <u>-.028</u> -.188** .648*** .513*** .446***	-	-	-	-	-	-
3. Gratitude Questionnaire	<u>.371***</u> .540*** .805*** .734*** .800*** <u>.664***</u> .784*** .619*** .568*** .702***	-.373*** -.334*** -.421*** <u>-.209**</u> -.373*** -.261** .054 -.084 <u>-.023</u> -.211** -.231** .011 -.199*	-	-	-	-	-
4. Satisfaction With Life Scale	<u>.471***</u> .592*** .628*** .469*** .545*** <u>.351***</u> .457*** .553*** .433*** .475***	.560*** .486*** .554*** <u>.514***</u> .463*** .556*** .484*** .577*** <u>.283***</u> .438***	-	-	-	-	-
5. Positive Affect	.517*** .501*** .615*** .581*** .730*** <u>.517***</u> .530***	.514*** .463*** .556*** .484*** .577*** <u>.283***</u> .438***	-	-	-	-	-
6. Positive Affect (gratitude items removed)	.517*** .530***	.438*** .488***	-	-	-	-	-

	1.	2.	3.	4.	5.	6.	7.
	-.465***	.484***	-.523***	-.378***	-.385***	-.339***	
	-.326**	.399***	-.435***	-.203*	-.347***	-.292**	
7. Negative Affect	-.381***	.296**	-.550***	-.210*	-.303**	-.290**	-
	-.294***	.078	-.309***	-.234***	-.176**	-.196**	
	-.475***	.280***	-.424***	-.418***	-.301***	-.335***	
	.795***	-.410**	.756***	.816***	.818***	.786***	-.742***
	.724***	-.148	.617***	.751***	.814***	.774***	-.688***
8. Subjective Well-Being (composite)	.831***	-.256**	.613***	.779***	.820***	.816***	-.668***
	.672***	-.041	.514***	.794***	.767***	.755***	-.640***
	.760***	-.278***	.636***	.812***	.762***	.775***	-.742***
	.800***	-.404**	.731***	.821***	.813***	.805***	-.729***
	.738***	-.149	.608***	.758***	.809***	.797***	-.671***
9. Subjective Well-Being (composite: gratitude items removed)	.842***	-.246**	.581***	.787***	.811***	.822***	-.661***
	.673***	-.054	.483***	.784***	.757***	.766***	-.650***
	.764***	-.278***	.621***	.814***	.741***	.779***	-.749***

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$; Study 1, Study 2, **Study 3**, Study 4, Study 5

Appendix B

Gratitude Manipulation and Control Instructions

Study 1

List-3/List-12

In this part of the study, we are going to ask you to please identify and describe **3 (12) specific experiences in your life that you are grateful for** – these can be as big or small as you wish. For example, this could be a memory of the first sip of your morning coffee, a special time spent with family, or getting a promotion at work! Try to remember a **specific instance when you felt gratitude due to a particular experience**, rather than identifying a topic in general (e.g., a specific instance you felt gratitude as you watched a sunset, rather than just “sunsets” in general). You will be asked to indicate **what it is about that remembered experience** you feel grateful for **and why**. For example, you could have felt grateful for that specific experience of your morning coffee because it gave you time to sit outside and watch the sunrise as you enjoyed waking up.

Control

In this part of the study, we are **interested in your word recognition and use**. You are going to go through **12 questions** and be asked to pick certain words out of a sentence based on specific rules. On the next page you will be provided with a sentence and a rule, we would like you to **pick out the number of words specified using the rule provided**. Then you will also be asked to **write a sentence** with a different set of words that you will be provided.

Study 2

List 3/List 12

In this part of the study, **we are going to ask you to complete a task that most people find to be particularly simple and easy. This task has been shown to increase happiness and well-being.** Please identify and describe 3 (12) specific **experiences that you have had in your life that you are grateful for** – these can be as big or small as you wish. For example, this could be a memory of the first sip of your morning coffee, a special time spent with family, or getting a promotion at work! Try to remember a specific instance when you felt gratitude due to a particular experience, rather than identifying a topic in general (e.g., a specific instance you felt gratitude as you watched a sunset, rather than just “sunsets” in general).

Control

In this part of the study, **we are going to ask you to complete a task that most people find to be particularly simple and easy.** We are interested in your word recognition and use. You are going to go through 12 questions and be asked to pick certain words out of a sentence based on specific rules. You will be provided with a sentence and a rule, we would like you to pick out the number of words specified using the rule provided.

Study 3

List 2/List 10

In this part of the study, we are going to ask you to complete a task that **most people find to be particularly simple and easy**. This task has been shown to increase happiness and well-being. Feelings of profound gratitude can often come from reflecting on the aspects of one's life that give it **meaning, great purpose and broad significance**. In other words, these **feelings of profound gratitude are centrally tied to the depths of one's being, going far beyond what is superficial or external**.

In this activity, you will be asked to recall **2 (10) experiences** from your recent past when you perceived a sense of profound gratitude.

Control

In this part of the study, we are going to ask you to complete a task that **most people find to be particularly simple and easy**. We are **interested in your word recognition and use**. You are going to go through **10 questions** and be asked to pick certain words out of a sentence based on specific rules. You will be provided with a sentence and a rule, we would like you to **pick out the number of words specified using the rule provided**.

Study 4

List 10 – Normal

In this part of the study, we are going to ask you to complete a task that has been shown to increase happiness and well-being. Feelings of profound gratitude can often come from reflecting on the aspects of one's life that give it meaning, great purpose and broad significance. In other words, these feelings of profound gratitude are centrally tied to the depths of one's being, going far beyond what is superficial or external.

In this activity, you will be asked to recall **10 experiences** from your recent past when you perceived a sense of profound gratitude.

List 10 – Hard is Okay

In this part of the study, we are going to ask you to complete a task that **some people find quite easy and other people find to be rather difficult. However, whether the task seems easy or difficult doesn't matter, what's really important is taking the time to actually do it. Just doing this task has been shown to increase happiness and well-being.** Feelings of profound gratitude can often come from reflecting on the aspects of one's life that give it meaning, great purpose and broad significance. In other words, these feelings of profound gratitude are centrally tied to the depths of one's being, going far beyond what is superficial or external.

In this activity, you will be asked to recall **10 experiences** from your recent past when you perceived a sense of profound gratitude.

Control

In this part of the study, we are going to ask you to complete a task that **most people find to be particularly simple and easy.** We are **interested in your word recognition and use.** You are going to go through **10 questions** and be asked to pick certain words out of a sentence based on specific rules. You will be provided with a sentence and a rule, we would like you to **pick out the number of words specified using the rule provided.**

Study 5

List 10 Normal

In this part of the study, we are going to ask you to complete a task that has been shown to increase happiness and well-being. Feelings of profound gratitude can often come from reflecting on the aspects of one's life that give it meaning, great purpose and broad significance. In other words, these feelings of profound gratitude are centrally tied to the depths of one's being, going far beyond what is superficial or external.

In this activity, you will be asked to recall **10 experiences** from your recent past when you perceived a sense of profound gratitude.

List 10 Meaningful

In this part of the study, we are going to ask you to complete a task that has been shown to increase happiness and well-being. Feelings of profound gratitude can often come from reflecting on the aspects of one's life that give it meaning, great purpose and broad significance. In other words, these feelings of profound gratitude are centrally tied to the depths of one's being, going far beyond what is superficial or external.

In this activity, you will be asked to recall **10 experiences** from your recent past when you perceived a sense of profound gratitude.

...analyzing responses (kept on page for 10s)

We noticed that it took you quite a while to complete this activity. Typically when someone takes longer to finish this activity, or when they find it to be difficult/harder to do, it indicates that they have taken the time to really think about their responses and have chosen the best responses possible for themselves. The time it took for you to complete this activity suggests that your responses are more meaningful.

Active Control

In this part of the study, we are going to ask you to complete a task that **most people find to be particularly simple and easy**. We are **interested in your word recognition and use**. You are going to go through **10 questions** and be asked to pick certain words out of a sentence based on specific rules. You will be provided with a sentence and a rule, we would like you to **pick out the number of words specified using the rule provided**.

Appendix C

Measures Collected

Gratitude Questionnaire (McCullough, Emmons, & Tsang, 2002)

Instructions: Using the scale below as a guide, indicate how much you agree with each statement.

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
<i>Very strongly disagree</i>	<i>Moderately disagree</i>	<i>Somewhat disagree</i>	<i>Neutral</i>	<i>Somewhat agree</i>	<i>Moderately agree</i>	<i>Very strongly agree</i>

_____ I have much to be thankful for.

_____ If I had to list everything that I was grateful for, it would be a very long list.

_____ When I look at the world, I don't see much to be grateful for. (**reverse-coded**)

_____ I am grateful to a wide variety of people.

_____ As I get older, I find myself more able to appreciate the people, events, and situations that have been a part of my life history.

_____ Long amounts of time can go by before I feel grateful for someone or something.
(**reverse-coded**)

Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985)

Instructions: Using the scale below as a guide, indicate how much you agree with each statement.

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
<i>Very strongly disagree</i>	<i>Moderately disagree</i>	<i>Somewhat disagree</i>	<i>Neutral</i>	<i>Somewhat agree</i>	<i>Moderately agree</i>	<i>Very strongly agree</i>

_____ In most ways my life is close to ideal.

_____ The conditions of my life are excellent.

_____ I am satisfied with my life.

_____ So far I have gotten the important things I want in life.

_____ If I could live my life over I would change almost nothing.

General Affect Scale

Instructions: Take a few seconds to check in with yourself. Using the scale provided, please indicate to what degree you feel the following descriptors reflect how you feel **right now**.

1	2	3	4	5	6	7	8	9	10
<i>Not at</i>									<i>Very</i>
<i>all</i>									<i>much</i>

_____ Interested

_____ Excited

_____ Irritated

_____ Stressed

_____ Happy

_____ Grateful*

_____ Determined

_____ Thankful

_____ Anxious

_____ Hopeful

_____ Appreciative

_____ Annoyed

_____ Frustrated

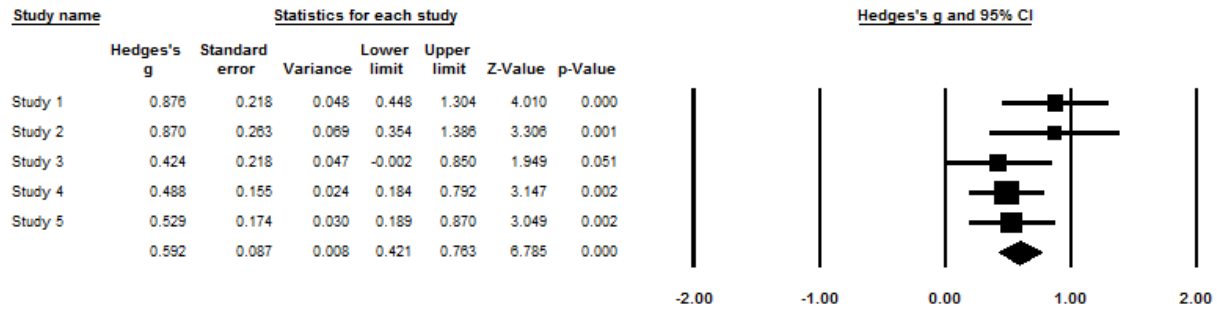
_____ Sad

Note. The adjective *grateful* was not included in the general affect scale in Studies 3, 4, and 5.

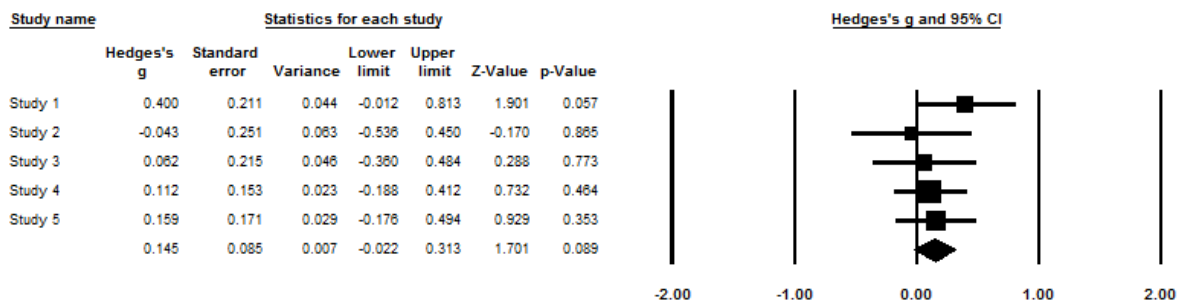
Appendix D

Detailed Results and Forest Plots of the Meta-Analysis for the Effect of Condition

Easy – 1SD Below the Mean of Fluency



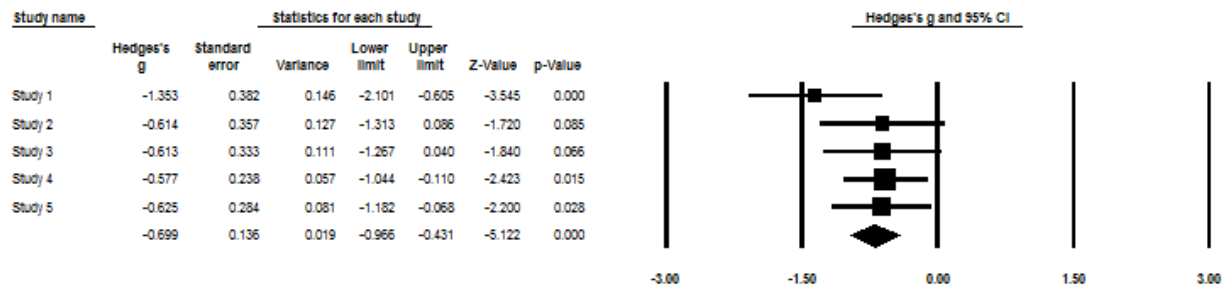
Hard – 1SD Above the Mean of Fluency



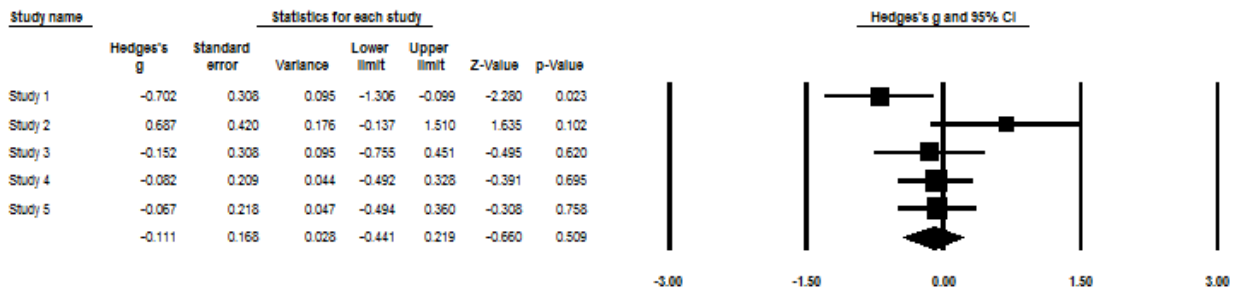
Appendix E

Detailed Results and Forest Plots of the Meta-Analysis for the Effect of Slope

Gratitude Condition



Control Condition



Appendix F

Results for State Gratitude and SWB (Gratitude Items Removed)

Study 1

State Gratitude

The degree to which feelings of state gratitude differed as a function of condition was examined. An ANCOVA revealed a significant effect of condition on state gratitude, $F(2, 140) = 8.58, p < .001, \eta^2 = .109$. Post-hoc analyses (Fisher's LSD) indicated that participants in the list-3 (easy; $M_{diff} = 1.25, 95\% \text{ CI } [0.60, 1.90], p < .001$), and the list-12 (difficult; $M_{diff} = 1.18, 95\% \text{ CI } [0.49, 1.88], p = .001$) condition reported significantly greater state gratitude than those in the control condition. However, the list-3 and list-12 conditions were not found to differ from one another (see Table A below for means). Thus, in line with expectations, completing a gratitude activity was related to higher reported feelings of gratitude. The list-3 (easy) condition did not differ from the list-12 (difficult) condition in reported gratitude contrary to expectations.

An exploratory linear regression was run regressing state gratitude on fluency at step one, condition (dummy coded: list-3 versus other/list-12 versus other) at step two, with the addition of the interactions of condition by fluency at step three (controlling for pre-well-being in all steps), in order to determine whether individual differences in fluency may predict overall levels of state gratitude (especially in the gratitude conditions). The relationship between fluency ($\beta = -0.08, p = .271$) and state gratitude at step one was not significant ($R^2 = .333, p < .001$). However, the relationship between condition and state gratitude at step two was significant ($\Delta R^2 = .104, p < .001$). Completing either the list-3 (easy; $\beta = 0.33, p < .001$) or list-12 (difficult; $\beta = 0.33, p < .001$) gratitude manipulation lead to significant increases in reported state gratitude. The

relationship between interaction and state gratitude at step three was not significant ($\Delta R^2 = .016$, $p = .147$) and thus is not examined further. See Table B for a full breakdown of this regression.

Subjective Well-Being (Gratitude Items Removed)

The extent to which participants' SWB differed as a function of condition was examined. An ANCOVA revealed a marginal difference in SWB across condition, $F(2, 140) = 2.70$, $p = .071$, $\eta^2 = .037$. Post-hoc analyses (Fisher's LSD) indicated that participants in the list-3 condition marginally ($M_{diff} = 0.55$, 95% CI [-0.10, 1.10], $p = .054$) and list-12 condition significantly ($M_{diff} = 0.63$, 95% CI [0.03, 1.22], $p = .040$) reported greater SWB than participants in the control condition. No differences were found between the two gratitude conditions (see Table A). Consistent with expectations, completing a gratitude activity was associated with greater overall SWB. However, contrary to predictions, completing the list-3 (easy) task was not associated with greater SWB compared to the list-12 (difficult) task.

In order to test whether individual differences in felt fluency (rather than manipulated difficulty) had an impact on SWB an exploratory linear regression was conducted regressing SWB on fluency at step one, condition (dummy coded: list-3 versus other/list-12 versus other) at step two, and the interactions of condition by fluency at step three (controlling for pre-well-being in all steps). The relationship between fluency ($\beta = -0.19$, $p < .001$) and SWB at step one was significant ($R^2 = .674$, $p < .001$), such that participants who experienced more difficulty completing the task reported lower SWB. The relationship between condition and SWB at step two was significant ($\Delta R^2 = .027$, $p = .003$); completing either the list-3 ($\beta = 0.14$, $p = .010$) or list-12 ($\beta = 0.19$, $p < .001$) gratitude exercise was associated with higher levels of reported SWB. The relationship between interaction and SWB at step three was not significant ($\Delta R^2 = .008$, $p = .150$; see Figure i and Table B) and is thus not explored further.

Study 2

State Gratitude

The degree to which feelings of state gratitude differed as a function of condition was examined. An ANCOVA revealed a significant effect of condition on state gratitude, $F(2, 101) = 8.01, p < .001, \eta^2 = .137$. Post-hoc analyses (Fisher's LSD) indicated that participants in the list-3 (easy; $M_{diff} = 1.46, 95\% \text{ CI } [0.69, 2.23], p < .001$), and the list-12 (difficult; $M_{diff} = 1.30, 95\% \text{ CI } [0.51, 2.09], p = .001$) condition reported significantly greater state gratitude than those in the control condition. However, the list-3 and list-12 conditions were not found to differ from one another (see Table C below for means). Thus, in line with expectations, completing a gratitude activity was related to higher reported feelings of gratitude. The list-3 (easy) condition did not differ from the list-12 (difficult) condition in reported gratitude contrary to expectations.

An exploratory linear regression was run regressing state gratitude on fluency at step one, condition (dummy coded: list-3 versus other/list-12 versus other) at step two, with the addition of the interactions of condition by fluency at step three (controlling for pre-well-being in all steps), in order to determine whether individual differences in fluency may predict overall levels of state gratitude (especially in the gratitude conditions). The relationship between fluency ($\beta = 0.09, p = .294$) and state gratitude at step one was not significant ($R^2 = .247, p < .001$). However, the relationship between condition and state gratitude at step two was significant ($\Delta R^2 = .097, p = .001$). Completing either the list-3 (easy; $\beta = 0.37, p < .001$) or list-12 (difficult; $\beta = 0.32, p < .001$) gratitude manipulation lead to significant increases in reported state gratitude. The relationship between interaction and state gratitude at step three was not significant ($\Delta R^2 = .016, p = .304$) and thus is not examined further. See Table B for a full breakdown of this regression.

Subjective Well-Being (Gratitude Items Removed)

The extent to which participants' SWB differed as a function of condition was examined. An ANCOVA revealed a significant difference in SWB across condition, $F(2, 101) = 3.18, p = .046, \eta^2 = .057$. Post-hoc analyses (Fisher's LSD) indicated that participants in the list-3 ($M_{diff} = 0.89, 95\% \text{ CI } [0.16, 1.62], p = .017$) and list-12 condition significantly ($M_{diff} = 0.75, 95\% \text{ CI } [0.01, 1.50], p = .049$) reported greater SWB than participants in the control condition. No differences were found between the two gratitude conditions (see Table C). Consistent with expectations, completing a gratitude activity was associated with greater overall SWB. However, contrary to predictions, completing the list-3 (easy) task was not associated with greater SWB compared to the list-12 (difficult) task.

In order to test whether individual differences in felt fluency (rather than manipulated difficulty) had an impact on SWB an exploratory linear regression was conducted regressing SWB on fluency at step one, condition (dummy coded: list-3 versus other/list-12 versus other) at step two, and the interactions of condition by fluency at step three (controlling for pre-well-being in all steps). The relationship between fluency ($\beta = -0.03, p = .704$) and SWB at step one was not significant ($R^2 = .542, p < .001$). However, the relationship between condition and SWB at step two was significant ($\Delta R^2 = .028, p = .042$); completing either the list-3 ($\beta = 0.20, p = .017$) or list-12 ($\beta = 0.17, p = .040$) gratitude exercise was associated with higher levels of reported SWB. Further, the relationship between interaction and SWB at step three was significant ($\Delta R^2 = .030, p = .029$; see Figure ii and Table D) and is explored below.

Examining the simple effects indicated that when the task was found to be subjectively easy (1SD below the mean), both the list-3 ($\beta = 0.33, p = .002$) and the list-12 ($\beta = 0.34, p = .002$) conditions exhibited significantly greater SWB than those in the control; the two gratitude conditions did not differ from one another in terms of reported SWB ($p = .869$). However, when

the task was experienced as subjectively difficult (1SD above the mean), SWB across all conditions did not differ (all p s > .665). Further, simple slopes analyses indicated that as subjective feelings of difficulty associated with the gratitude task increased, reported SWB decreased marginally in the list-12 (difficult) condition ($\beta = -0.20, p = .072$), and increased marginally in the control condition, ($\beta = 0.20, p = .083$). However, subjective fluency was not associated with SWB in the list-3 (easy) condition ($p = .222$).

Study 3

State Gratitude

The degree to which feelings of state gratitude (as a two-item measure) differed as a function of condition was examined. An ANCOVA revealed a marginal effect of condition on state gratitude, $F(2, 123) = 2.88, p = .060, \eta^2 = .045$. Post-hoc analyses (Fisher's LSD) indicated that participants in the list-2 condition significantly (easy; $M_{diff} = 0.82, 95\% \text{ CI } [0.09, 1.55], p = .029$), and the list-10 condition marginally (difficult; $M_{diff} = 0.70, 95\% \text{ CI } [-0.03, 1.44], p = .061$) reported greater state gratitude than those in the control condition. However, the list-2 and list-10 conditions were not found to differ from one another (see Table E below for means). Thus, in line with expectations, completing a gratitude activity was related to higher reported feelings of gratitude. The list-2 (easy) condition did not differ from the list-10 (difficult) condition in reported gratitude contrary to expectations.

An exploratory linear regression was run regressing state gratitude on fluency at step one, condition (dummy coded: list-2 versus other/list-10 versus other) at step two, with the addition of the interactions of condition by fluency at step three (controlling for pre-well-being in all steps), in order to determine whether individual differences in fluency may predict overall levels of state gratitude (especially in the gratitude conditions). The relationship between fluency ($\beta = -0.14, p$

= .058) and state gratitude at step one was marginally significant ($R^2 = .310, p < .001$), such that participants who found the task to be more difficult reported lower state gratitude. The relationship between condition and state gratitude at step two was significant ($\Delta R^2 = .042, p = .022$). Completing either the list-2 (easy; $\beta = 0.21, p = .014$) or list-10 (difficult; $\beta = 0.20, p = .021$) gratitude manipulation lead to significant increases in reported state gratitude. The relationship between interaction and state gratitude at step three was not significant ($\Delta R^2 = .003, p = .728$) and thus is not examined further. See Table F for a full breakdown of this regression.

Subjective Well-Being (Gratitude Items Removed)

The extent to which participants' SWB differed as a function of condition was examined. An ANCOVA revealed no differences in SWB across condition, $F(2, 123) = 1.74, p = .180$.

In order to test whether individual differences in felt fluency (rather than manipulated difficulty) had an impact on SWB an exploratory linear regression was conducted regressing SWB on fluency at step one, condition (dummy coded: list-2 versus other/list-10 versus other) at step two, and the interactions of condition by fluency at step three (controlling for pre-well-being in all steps). The relationship between fluency ($\beta = -0.12, p = .013$) and SWB at step one was significant ($R^2 = .723, p < .001$), such that as participants found the task more difficult, the lower their reported SWB. The relationship between condition and SWB at step two was marginally significant ($\Delta R^2 = .011, p = .076$); completing the list-2 gratitude exercise ($\beta = 0.12, p = .029$) was associated with higher levels of reported SWB compared to the control, but the list-10 dummy code was not significantly associated with SWB. The relationship between interaction and SWB at step three was not significant ($\Delta R^2 = .007, p = .204$; see Figure iii and Table F) and is thus not explored further.

Study 4

State Gratitude

The degree to which feelings of state gratitude (as a two-item measure) differed as a function of condition was examined. An ANCOVA revealed a significant effect of condition on state gratitude, $F(2, 239) = 12.69, p < .001, \eta^2 = .096$. Post-hoc analyses (Fisher's LSD) indicated that participants in the normal ($M_{diff} = 1.07, 95\% \text{ CI } [0.54, 1.61], p < .001$), and the hard-is-okay ($M_{diff} = 1.25, 95\% \text{ CI } [0.71, 1.79], p < .001$) conditions significantly reported greater state gratitude than those in the control condition. However, the normal and hard-is-okay gratitude conditions were not found to differ from one another (see Table G below for means). Thus, in line with expectations, completing a gratitude activity was related to higher reported feelings of gratitude. The two gratitude conditions however did not differ in reported state gratitude contrary to expectations.

An exploratory linear regression was run regressing state gratitude on fluency at step one, condition (dummy coded: normal = 1, 0; hard-is-okay = 0, 1; control = 0, 0) at step two, with the addition of the interactions of condition by fluency at step three (controlling for pre-well-being in all steps), in order to determine whether individual differences in fluency may predict overall levels of state gratitude (especially in the gratitude conditions). The relationship between fluency ($\beta = 0.09, p = .143$) and state gratitude at step one was not significant ($R^2 = .188, p < .001$). However, the relationship between condition and state gratitude at step two was significant ($\Delta R^2 = .075, p < .001$). Completing either the normal ($\beta = 0.28, p = .001$) or hard-is-okay ($\beta = 0.32, p < .001$) gratitude condition lead to significant increases in reported state gratitude compared to the control. The relationship between interaction and state gratitude at step three was not significant ($\Delta R^2 = .005, p = .478$) and thus is not examined further. See Table H for a full breakdown of this regression.

Subjective Well-Being (Gratitude Items Removed)

The extent to which participants' SWB differed as a function of condition was examined. An ANCOVA revealed a marginally significant difference in SWB across condition, $F(2, 239) = 2.64, p = .078, \eta^2 = .022$. Post-hoc analyses (Fisher's LSD) indicated that participants in the normal gratitude condition ($M_{diff} = 0.56, 95\% \text{ CI } [0.06, 1.05], p = .028$) reported significantly greater SWB than those in the control condition. The hard-is-okay gratitude condition was not significantly different from either the normal gratitude condition, or the control. Thus contrary to expectations, participants who completed the hard-is-okay gratitude conditions did not fare better than those in the normal gratitude condition but rather appeared similar to the control – although the normal gratitude condition did exhibit greater SWB than the control (as would be expected).

In order to test whether individual differences in felt fluency (rather than manipulated difficulty) had an impact on SWB an exploratory linear regression was conducted regressing SWB on fluency at step one, condition (dummy coded: normal = 1, 0; hard-is-okay = 0, 1; control = 0, 0) at step two, and the interactions of condition by fluency at step three (controlling for pre-well-being in all steps). The relationship between fluency ($\beta = -0.03, p = .493$) and SWB at step one was not significant ($R^2 = .454, p < .001$). The relationship between condition and SWB at step two however, was significant ($\Delta R^2 = .020, p = .011$); completing the normal ($\beta = 0.17, p = .004$) or hard-is-okay ($\beta = 0.14, p = .022$) gratitude exercise was associated with higher levels of reported SWB compared to the control. The relationship between interaction and SWB at step three was not significant ($\Delta R^2 = .007, p = .193$; see Figure iv and Table H) and is thus not explored further.

Study 5

State Gratitude

The degree to which feelings of state gratitude (as a two-item measure) differed as a function of condition was examined. An ANCOVA revealed a significant effect of condition on state gratitude, $F(3, 287) = 8.67, p < .001, \eta^2 = .083$. Post-hoc analyses (Fisher's LSD) indicated that participants in the normal gratitude condition reported significantly higher state gratitude than both those in the active ($M_{diff} = 1.53, 95\% \text{ CI } [0.77, 2.29], p < .001$), and baseline ($M_{diff} = 1.07, 95\% \text{ CI } [0.31, 1.83], p = .006$) control conditions. The hard-is-meaningful gratitude condition also reported significantly higher state gratitude than the active ($M_{diff} = 1.56, 95\% \text{ CI } [0.83, 2.30], p = .001$) and baseline ($M_{diff} = 1.10, 95\% \text{ CI } [0.37, 1.84], p = .003$) control conditions. The two gratitude conditions did not differ from one another in terms of state gratitude; nor did the two control conditions (see Table I below for means). Thus, in line with expectations, completing a gratitude activity was related to higher reported feelings of gratitude than either an active or baseline control. However, the hard-is-meaningful gratitude condition did not exhibit higher state gratitude as predicted.

An exploratory linear regression was run regressing state gratitude on fluency at step one, condition (dummy coded: normal = 1, 0; hard-is-meaningful = 0, 1; control = 0, 0) at step two, with the addition of the interactions of condition by fluency at step three (controlling for pre-well-being in all steps), in order to determine whether individual differences in fluency may predict overall levels of state gratitude (especially in the gratitude conditions). Because the baseline control condition did not include a measure of fluency it is not included in this analysis. The relationship between fluency ($\beta = -0.28, p < .001$) and state gratitude at step one was significant ($R^2 = .391, p < .001$), such that when participants experienced difficulty completing their assigned exercise the reported lower state gratitude. The relationship between condition and state gratitude at step two ($\Delta R^2 = .010, p = .184$) nor was the relationship between interaction and

state gratitude at step three were significant ($\Delta R^2 = .006, p = .351$); thus, they are not examined further. See Table J for a full breakdown of this regression.

Subjective Well-Being (Gratitude Items Removed)

The extent to which participants' SWB differed as a function of condition was examined. An ANCOVA revealed a significant difference in SWB across conditions, $F(3, 287) = 4.50, p = .004, \eta^2 = .045$. Post-hoc analyses (Fisher's LSD) indicated that participants in the normal gratitude condition reported significantly greater SWB than those in the control condition ($M_{diff} = 0.58, 95\% \text{ CI } [0.08, 1.09], p = .023$), but did not differ in terms of SWB from the active control condition. The hard-is-meaningful gratitude condition reported marginally greater SWB than those the active control ($M_{diff} = 0.44, 95\% \text{ CI } [-0.04, 0.93], p = .074$), and significantly greater SWB than the baseline control condition ($M_{diff} = 0.88, 95\% \text{ CI } [0.39, 1.36], p < .001$). The two gratitude conditions did not differ from one another in terms of SWB. Participants in the active control condition reported marginally greater SWB than those in the baseline control condition ($M_{diff} = 0.43, 95\% \text{ CI } [-0.13, 0.88], p = .057$). Thus contrary to expectations, participants who completed the hard-is-meaningful gratitude condition did not fare better than those in the normal gratitude condition – although both gratitude conditions did exhibit significantly greater SWB than the baseline control (as would be expected).

In order to test whether individual differences in felt fluency (rather than manipulated difficulty) had an impact on SWB an exploratory linear regression was conducted regressing SWB on fluency at step one, condition (dummy coded: normal = 1, 0; hard-is-meaningful = 0, 1; control = 0, 0) at step two, and the interactions of condition by fluency at step three (controlling for pre-well-being in all steps). The relationship between fluency ($\beta = -0.15, p = .003$) and SWB at step one was significant ($R^2 = .561, p < .001$), such that as participants reported greater

difficulty the endorsed lower SWB. The relationship between condition and SWB at step two was significant ($\Delta R^2 = .024, p = .004$); completing the normal ($\beta = 0.11, p = .039$) or hard-is-meaningful ($\beta = 0.18, p = .001$) gratitude exercise was associated with higher levels of reported SWB compared to the control. Further the relationship between interaction and SWB at step three was significant ($\Delta R^2 = .019, p = .010$; see Figure v and Table J) and is explored below.

Examining the simple effects indicated that when the task was found to be subjectively easy, both the normal ($\beta = 0.26, p < .001$) and the hard-is-meaningful ($\beta = 0.20, p = .012$) gratitude conditions exhibited significantly greater SWB than those in the active control condition; the two gratitude conditions did not differ from one another in terms of reported SWB. On the other hand, when the task was experienced as subjectively difficult, the gratitude conditions did not differ from the active control in terms of SWB ($ps > .322$). Interestingly however, participants in the normal gratitude condition did report marginally lower SWB than those in the hard-is-meaningful condition ($\beta = -0.17, p = .052$) when the task was experienced as difficult, suggesting some support for the prediction that indicating that difficulty was associated with meaning (hard-is-meaningful condition) would dampen the impact of felt fluency observed in the more traditional (normal condition) gratitude manipulation. Further, simple slopes analyses indicated that as subjective feelings of difficulty associated with the gratitude task increased, reported SWB decreased significantly in the normal ($\beta = -0.39, p < .001$) and marginally in the hard-is-meaningful ($\beta = -0.17, p = .052$) gratitude conditions. Fluency was not associated with feelings of SWB in the active control condition ($\beta = 0.01, p = .983$).

Table A

Study 1: Descriptive statistics for state gratitude, and subjective well-being (with gratitude items removed) across condition

Condition	State Gratitude $F(2, 140) = 8.58, p < .001, \eta^2 = .109$		Subjective Well-Being (gratitude items removed) $F(2, 140) = 2.70, p = .071, \eta^2 = .037$	
	$M (SE)$	95% CI	$M (SE)$	95% CI
List 3	7.62 ^a (0.23)	[7.17, 8.07]	0.16 ^{ab} (0.19)	[-0.22, 0.54]
List 12	7.56 ^a (0.26)	[7.05, 8.06]	0.24 ^a (0.22)	[-0.19, 0.67]
Control	6.37 ^b (0.24)	[5.90, 6.84]	-0.38 ^b (0.23)	[-0.79, 0.02]

Note. Means adjusted for the covariate (pre-well-being). Means that do not share a letter reflect significant differences ($p < .050$). Means that share an *italicized* letter reflect marginal differences ($p < .100$).

Table B

Study 1: Linear regressions predicting state gratitude and subjective well-being (with gratitude items removed)

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	df	<i>p</i>	95% CI
State Gratitude						
Step 1						
Fluency	-0.06	0.05	-1.11	138	.271	[-0.17, 0.05]
Step 2						
Fluency	-0.12	0.05	-2.18	136	.031	[-0.22, -0.01]
List 3	1.41	0.32	4.43	136	< .001	[0.78, 2.04]
List 12	1.50	0.35	4.24	136	< .001	[0.80, 2.20]
Step 3						
Fluency	-0.03	0.09	-0.37	134	.716	[-0.20, 0.14]
List 3	1.32	0.33	4.03	134	< .001	[0.67, 1.96]
List 12	1.61	0.37	4.43	134	< .001	[0.89, 2.33]
List 3 X Fluency	-0.06	0.12	-0.49	134	.623	[-0.30, 0.18]
List 12 X Fluency	-0.26	0.14	-1.91	134	.059	[-0.52, 0.01]
Subjective Well-Being						
Step 1						
Fluency	-0.16	0.04	-3.66	138	<.001	[-0.25, -0.07]
Step 2						
Fluency	-0.20	0.04	-4.52	136	< .001	[-0.29, -0.12]
List 3	0.70	0.27	2.63	136	.010	[0.17, 1.23]
List 12	1.00	0.30	3.36	136	.001	[0.41, 1.58]
Step 3						
Fluency	-0.16	0.07	-2.29	134	.023	[-0.30, -0.02]
List 3	0.66	0.27	2.43	134	.017	[0.12, 1.20]
List 12	1.13	0.31	3.70	134	< .001	[0.53, 1.73]
List 3 X Fluency	0.02	0.10	0.20	134	.842	[-0.18, 0.22]
List 12 X Fluency	-0.18	0.11	-1.61	134	.110	[-0.40, 0.04]

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table C

Study 2: Descriptive statistics for state gratitude, and subjective well-being (with gratitude items removed) across condition

Condition	State Gratitude $F(2, 101) = 8.01, p < .001, \eta^2 = .137$		Subjective Well-Being (gratitude items removed) $F(2, 101) = 3.18, p = .046, \eta^2 = .059$	
	$M (SE)$	95% CI	$M (SE)$	95% CI
List 3	7.14 ^a (0.24)	[6.66, 7.62]	0.28 ^a (0.23)	[-0.18, 0.73]
List 12	6.98 ^a (0.26)	[6.47, 7.50]	0.14 ^a (0.25)	[-0.35, 0.63]
Control	5.68 ^b (0.30)	[5.09, 6.28]	-0.62 ^b (0.29)	[-1.18, -0.05]

Note. Means adjusted for the covariate (pre-well-being). Means that do not share a letter reflect significant differences ($p < .050$). Means that share an *italicized* letter reflect marginal differences ($p < .100$).

Table D

Study 2: Linear regressions predicting state gratitude and subjective well-being (with gratitude items removed)

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	df	<i>p</i>	95% CI
State Gratitude						
Step 1						
Fluency	0.07	0.07	1.06	101	.294	[-0.06, 0.20]
Step 2						
Fluency	0.03	0.06	0.53	99	.594	[-0.09, 0.16]
List 3	1.42	0.39	3.62	99	< .001	[0.64, 2.20]
List 12	1.26	0.41	3.12	99	.002	[0.46, 2.07]
Step 3						
Fluency	0.18	0.11	1.56	97	.123	[-0.05, 0.40]
List 3	1.32	0.40	3.33	97	.001	[0.53, 2.11]
List 12	1.20	0.41	2.93	97	.004	[0.39, 2.01]
List 3 X Fluency	-0.18	0.16	-1.17	97	.246	[-0.49, 0.13]
List 12 X Fluency	-0.23	0.16	-1.48	97	.142	[-0.54, 0.08]
Subjective Well-Being						
Step 1						
Fluency	-0.02	0.06	-0.38	101	.704	[-0.15, 0.10]
Step 2						
Fluency	-0.05	0.06	-0.76	99	.447	[-0.17, 0.08]
List 3	0.91	0.37	2.43	99	.017	[0.17, 1.65]
List 12	0.90	0.39	2.09	99	.040	[0.04, 1.57]
Step 3						
Fluency	0.18	0.11	1.75	97	.083	[-0.02, 0.39]
List 3	0.75	0.37	2.03	97	.046	[0.02, 1.48]
List 12	0.69	0.38	1.82	97	.072	[-0.06, 1.44]
List 3 X Fluency	-0.31	0.15	-2.12	97	.037	[-0.60, -0.02]
List 12 X Fluency	-0.37	0.14	-2.54	97	.013	[-0.65, -0.08]

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table E

Study 3: Descriptive statistics for state gratitude, and subjective well-being (with gratitude items removed) across condition

Condition	State Gratitude $F(2, 123) = 2.88, p = .060, \eta^2 = .045$		Subjective Well-Being (gratitude items removed) $F(2, 123) = 1.74, p = .180, \eta^2 = .028$	
	$M (SE)$	95% CI	$M (SE)$	95% CI
List 2	7.79 ^a (0.27)	[7.27, 8.32]	0.23 ^{ab} (0.19)	[-0.14, 0.61]
List 10	7.68 ^{ab} (0.27)	[7.15, 8.21]	0.04 ^{ac} (0.19)	[-0.34, 0.41]
Control	6.97 ^b (0.26)	[6.46, 7.49]	-0.26 ^{bc} (0.19)	[-0.62, 0.11]

Note. Means adjusted for the covariate (pre-well-being). Means that do not share a letter reflect significant differences ($p < .050$). Means that share an *italicized* letter reflect marginal differences ($p < .100$).

Table F

Study 3: Linear regressions predicting state gratitude and subjective well-being (with gratitude items removed)

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	df	<i>p</i>	95% CI
State Gratitude						
Step 1						
Fluency	-0.11	0.06	-1.91	124	.058	[-0.22, 0.01]
Step 2						
Fluency	-.013	0.06	-2.39	122	.019	[-0.25, -0.02]
List 3	0.92	0.37	2.50	122	.014	[0.19, 1.64]
List 12	0.87	0.37	2.33	122	.021	[0.13, 1.61]
Step 3						
Fluency	-0.08	0.10	-0.80	120	.424	[-0.27, 0.11]
List 3	0.88	0.37	2.38	120	.019	[0.15, 1.62]
List 12	0.84	0.38	2.23	120	.028	[0.09, 1.59]
List 3 X Fluency	-0.11	0.14	-0.80	120	.433	[-0.39, 0.17]
List 12 X Fluency	-0.07	0.14	-0.50	120	.618	[-0.35, 0.21]
Subjective Well-Being						
Step 1						
Fluency	-0.10	0.04	-2.53	124	.013	[-0.18, -0.02]
Step 2						
Fluency	-0.11	0.04	-2.86	122	.005	[-0.19, -0.04]
List 3	0.57	0.26	2.21	122	.029	[0.06, 1.08]
List 12	0.43	0.26	1.63	122	.105	[-0.09, 0.95]
Step 3						
Fluency	-0.03	0.07	-0.41	124	.680	[-0.16, 0.11]
List 3	0.52	0.26	2.02	124	.046	[0.01, 1.04]
List 12	0.38	0.26	1.45	124	.149	[-0.14, 0.90]
List 3 X Fluency	-0.18	0.10	-1.79	124	.075	[-0.37, 0.02]
List 12 X Fluency	-0.10	0.10	-0.98	124	.329	[-0.30, 0.10]

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table G

Study 4: Descriptive statistics for state gratitude, and subjective well-being (with gratitude items removed) across condition

Condition	State Gratitude $F(2, 239) = 12.69, p < .001, \eta^2 = .096$		Subjective Well-Being (gratitude items removed) $F(2, 239) = 2.64, p = .073, \eta^2 = .022$	
	$M (SE)$	95% CI	$M (SE)$	95% CI
Normal	7.65 ^a (0.20)	[7.26, 8.05]	0.26 ^a (0.19)	[-0.10, 0.63]
Hard is Okay	7.83 ^a (0.20)	[7.43, 8.23]	0.10 ^{ab} (0.19)	[-0.27, 0.48]
Control	6.58 ^b (0.18)	[6.22, 6.94]	-0.29 ^b (0.17)	[-0.63, 0.04]

Note. Means adjusted for the covariate (pre-well-being). Means that do not share a letter reflect significant differences ($p < .050$). Means that share an *italicized* letter reflect marginal differences ($p < .100$).

Table H

Study 4: Linear regressions predicting state gratitude and subjective well-being (with gratitude items removed)

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	df	<i>p</i>	95% CI
State Gratitude						
Step 1						
Fluency	0.07	0.05	1.47	240	.143	[-0.22, 0.01]
Step 2						
Fluency	-0.05	0.05	-1.07	238	.285	[-0.25, -0.02]
Normal	1.21	0.30	4.04	238	< .001	[0.19, 1.64]
Hard is Okay	1.39	0.30	4.58	238	< .001	[0.13, 1.61]
Step 3						
Fluency	0.02	0.08	0.27	236	.790	[-0.27, 0.11]
Normal	1.15	0.31	3.69	236	< .001	[0.15, 1.62]
Hard is Okay	1.28	0.32	3.97	236	< .001	[0.09, 1.59]
Normal X Fluency	-0.14	0.12	-1.21	236	.228	[-0.39, 0.17]
Hard is Okay X Fluency	-0.08	0.12	-0.69	236	.494	[-0.35, 0.21]
Subjective Well-Being						
Step 1						
Fluency	-0.03	0.04	-0.69	240	.493	[-0.11, 0.05]
Step 2						
Fluency	-0.09	0.05	-2.07	238	.040	[-0.18, -0.01]
Normal	0.81	0.28	2.90	238	.004	[0.26, 1.35]
Hard is Okay	0.65	0.28	2.31	238	.022	[0.10, 1.20]
Step 3						
Fluency	-0.03	0.08	-0.44	236	.659	[-0.18, 0.12]
Normal	0.67	0.29	2.34	236	.020	[0.11, 1.24]
Hard is Okay	0.69	0.30	2.32	236	.021	[0.10, 1.27]
Normal X Fluency	-0.02	0.11	-0.20	236	.841	[-0.23, 0.19]
Hard is Okay X Fluency	-0.19	0.11	-1.70	236	.090	[-0.42, 0.31]

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table I

Study 5: Descriptive statistics for state gratitude, and subjective well-being (with gratitude items removed) across condition

Condition	State Gratitude $F(3,287) = 8.67, p < .001, \eta^2 = .083$		Subjective Well-Being (gratitude items removed) $F(3, 287) = 4.50, p = .004, \eta^2 = .045$	
	$M (SE)$	95% CI	$M (SE)$	95% CI
Normal	8.00 ^a (0.30)	[7.41, 8.59]	0.15 ^{ab} (0.20)	[-0.24, 0.55]
Hard is Meaningful	8.04 ^a (0.28)	[7.48, 8.59]	0.45 ^{ac} (0.19)	[0.08, 0.82]
Active Control	6.47 ^b (0.24)	[5.99, 6.95]	0.01 ^{bcd} (0.16)	[-0.31, 0.32]
Baseline Control	6.93 ^b (0.24)	[6.46, 7.41]	-0.43 ^d (0.16)	[-0.74, -0.11]

Note. Means adjusted for the covariate (pre-well-being). Means that do not share a letter reflect significant differences ($p < .050$). Means that share an *italicized* letter reflect marginal differences ($p < .100$).

Table J

Study 5: Linear regressions predicting state gratitude and subjective well-being (with gratitude items removed)

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	df	<i>p</i>	95% CI
State Gratitude						
Step 1						
Fluency	-0.05	0.06	-0.92	199	.360	[-0.17, 0.06]
Step 2						
Fluency	-0.22	0.06	-3.59	197	<.001	[-0.33, -0.10]
Normal	2.07	0.41	5.12	197	<.001	[1.27, 2.87]
Hard is Meaningful	2.11	0.40	5.27	197	<.001	[1.32, 2.90]
Step 3						
Fluency	-0.03	0.12	-0.22	195	.825	[-0.26, 0.21]
Normal	1.84	0.43	4.31	195	<.001	[1.00, 2.69]
Hard is Meaningful	1.89	0.43	4.44	195	<.001	[1.05, 2.74]
Normal X Fluency	-0.25	0.15	-1.66	195	.099	[-0.54, 0.05]
Meaningful X Fluency	-0.25	0.16	-1.59	195	.114	[-0.56, 0.06]
Subjective Well-Being						
Step 1						
Fluency	-0.11	0.04	-3.04	199	.003	[-0.18, -0.04]
Step 2						
Fluency	-0.17	0.04	-4.22	197	<.001	[-0.25, -0.09]
Normal	0.56	0.27	2.08	197	.039	[0.28, 1.10]
Hard is Meaningful	0.89	0.27	3.31	197	.001	[0.36, 1.41]
Step 3						
Fluency	0.01	0.08	0.02	195	.983	[-0.15, 0.16]
Normal	0.43	0.28	1.52	195	.130	[-0.13, 0.98]
Hard is Meaningful	0.58	0.28	2.05	195	.041	[0.02, 1.13]
Normal X Fluency	-0.30	0.10	-3.01	195	.003	[-0.49, -0.10]
Meaningful X Fluency	-0.13	0.10	-1.29	195	.198	[-0.34, 0.07]

Note. [†] $p < .10$, ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$

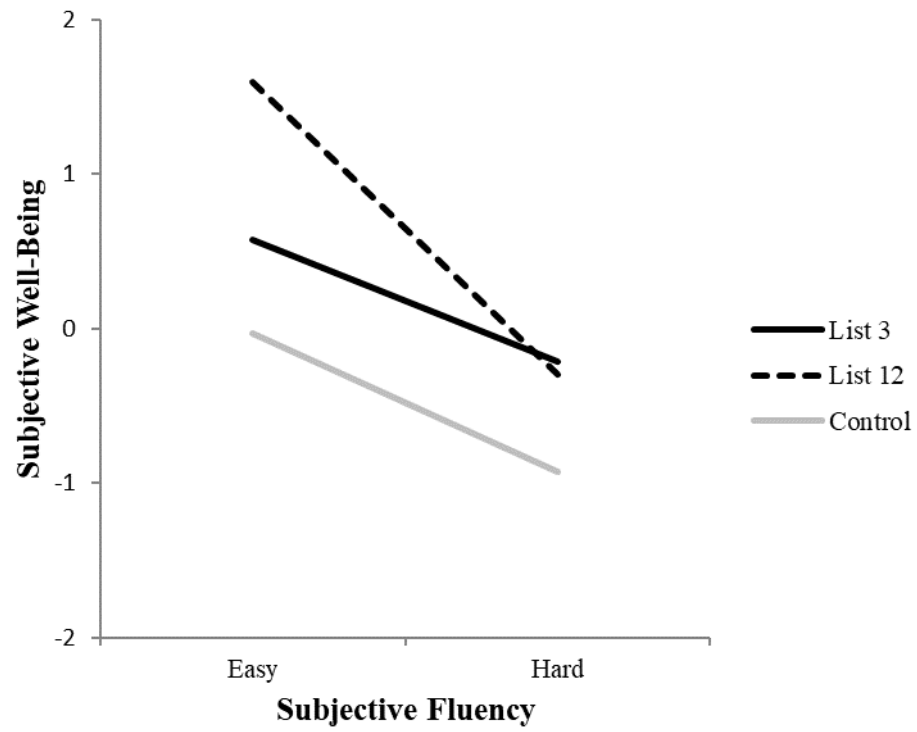


Figure i. Study 1: Interaction of condition and subjective fluency predicting report SWB (gratitude items removed).

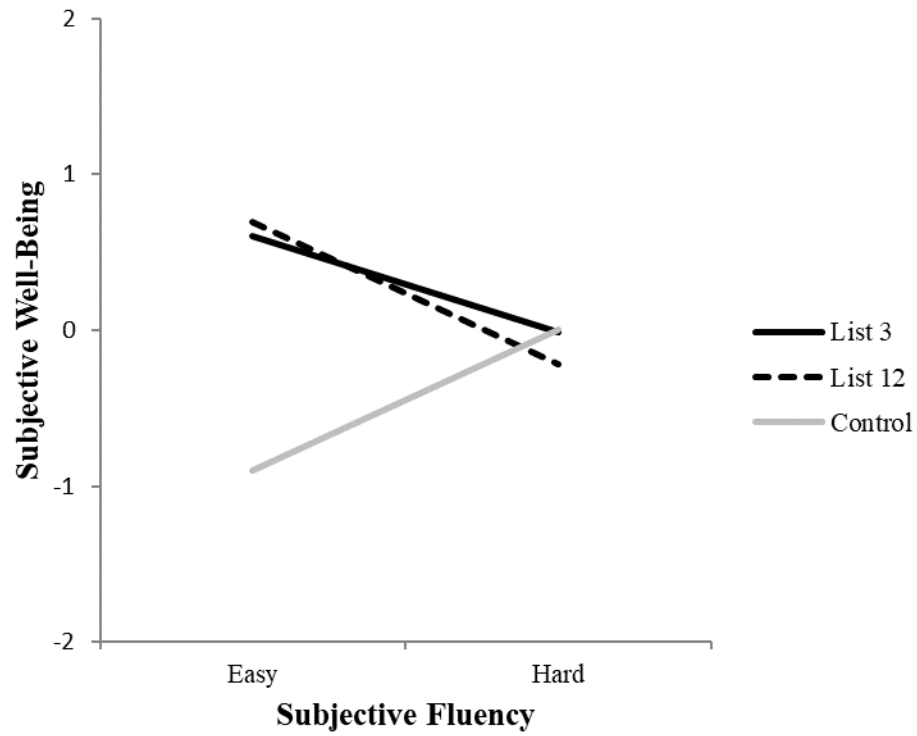


Figure ii. Study 2: Interaction of condition and subjective fluency predicting report SWB (gratitude items removed).

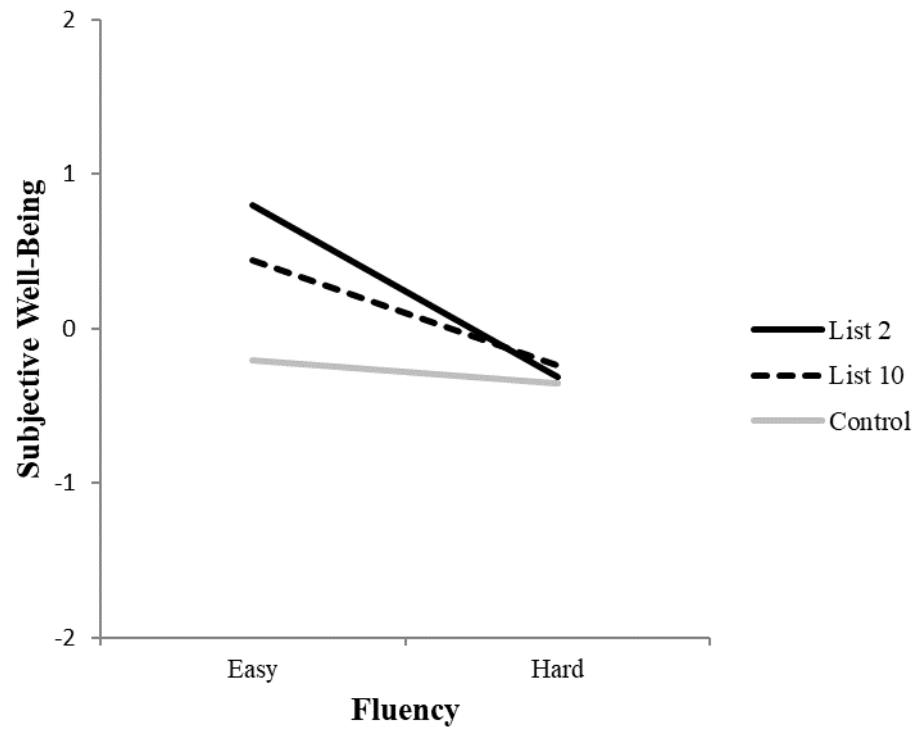


Figure iii. Study 3: Interaction of condition and subjective fluency predicting report SWB (gratitude items removed).

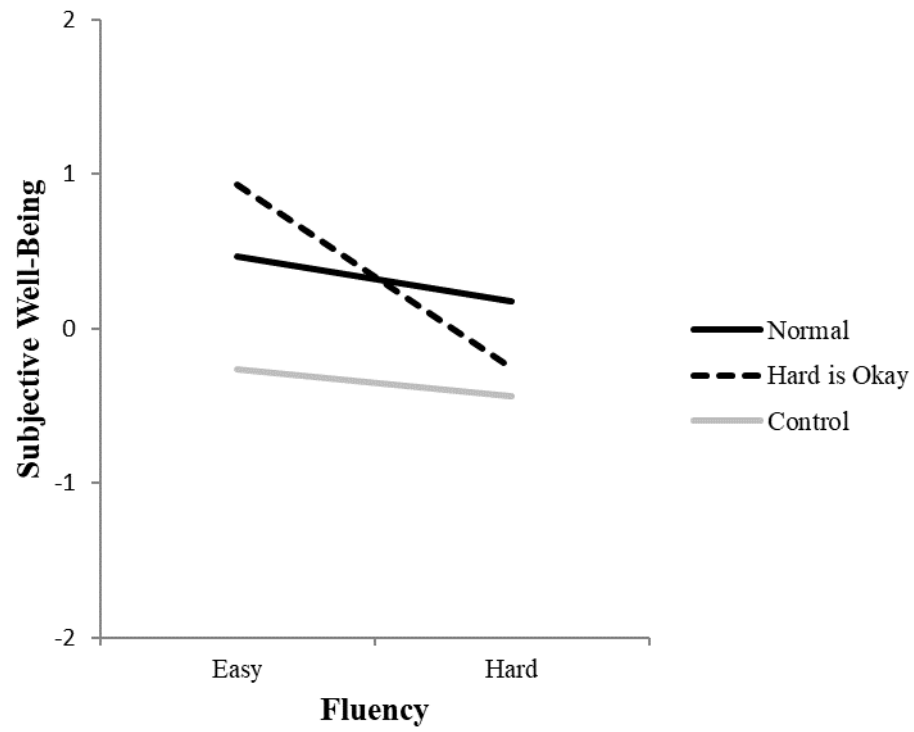


Figure iv. Study 4: Interaction of condition and subjective fluency predicting report SWB (gratitude items removed).

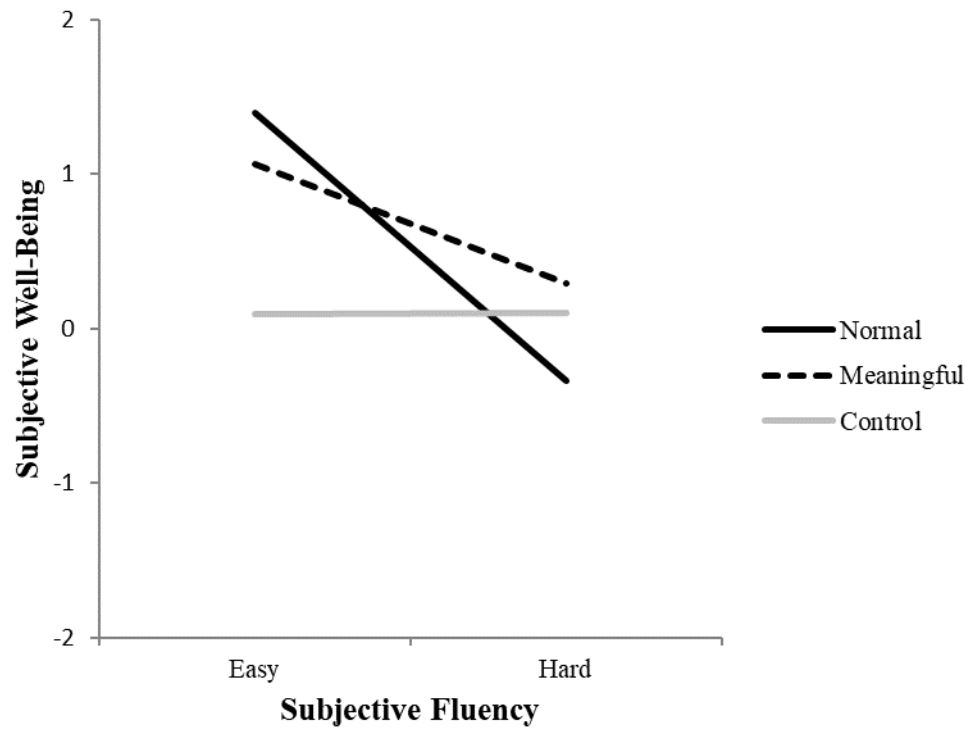


Figure v. Study 5: Interaction of condition and subjective fluency predicting report SWB (gratitude items removed).

Appendix G

Factor Analysis of the GAS: Studies 1-5

	Study 1		Study 2		Study 3		Study 4		Study 5	
	1	2	1	2	1	2	1	2	1	2
% of Variance Explained	52.15	23.55	49.01	22.29	49.82	25.40	40.88	27.96	45.40	24.66
Interested	.719	-.070	.628	.010	.758	-.030	.733	-.123	-.116	.697
Excited	.774	.120	.799	.166	.790	.061	.782	-.040	-.050	.715
Irritated	-.026	.869	-.006	.873	.031	.892	.062	.761	.768	-.067
Stressed	.033	.901	-.096	.802	-.036	.867	.094	.721	.866	.119
Happy	.708	-.277	.769	-.117	.850	-.045	.817	-.122	-.387	.604
Grateful	.845	-.079	.960	-.020	-	-	-	-	-	-
Determined	.805	.182	.733	.068	.800	-.021	.790	.112	.053	.739
Thankful	.914	-.029	.910	-.073	.857	.001	.824	.052	.054	.830
Anxious	.161	.874	.227	.733	.147	.800	.146	.786	.809	.157
Hopeful	.865	.135	.841	.034	.870	.073	.776	.076	.124	.864
Appreciative	.872	-.071	.738	-.052	.846	-.025	.799	.078	.127	.884
Annoyed	.017	.893	.081	.855	-.024	.902	-.060	.843	.835	-.112
Frustrated	.019	.940	-.029	.946	-.039	.944	-.050	.918	.883	-.005
Sad	-.119	.746	-.154	.738	-.083	.723	-.171	.704	.768	.002

Note. All factor analyses conducted using Principal Axis Factoring with a Promax rotation and resulted in a two-factor solution (i.e., two Eigenvalues greater than 1). The “grateful” item was not included in Study 3, 4, or 5.

Table 1

Study 1: Descriptive statistics for fluency, gratitude, and subjective well-being across condition

Condition	N	Fluency $F(2, 137) = 6.12, p = .003, \eta^2 = .082$		Gratitude $F(2, 139) = 2.71, p = .070, \eta^2 = .037$		Subjective Well-Being $F(2, 140) = 4.39, p = .014, \eta^2 = .059$	
		<i>M</i> (<i>SE</i>)	95% CI	<i>M</i> (<i>SE</i>)	95% CI	<i>M</i> (<i>SE</i>)	95% CI
List 3	53	3.83 ^a (0.36)	[3.12, 4.54]	5.38 ^a (0.13)	[5.13, 5.62]	0.23 ^a (0.19)	[-0.16, 0.61]
List 12	42	5.17 ^b (0.40)	[4.37, 5.96]	5.30 ^{ab} (0.14)	[5.03, 5.58]	0.29 ^a (0.22)	[-0.14, 0.73]
Control	49	3.28 ^a (0.37)	[2.55, 4.01]	4.97 ^b (0.13)	[4.72, 5.23]	-0.50 ^b (0.40)	[-0.90, -0.09]

Note. Means adjusted for the covariate (pre-well-being). Means that do not share a letter reflect significant differences ($p < .050$). Means that share an *italicized* letter reflect marginal differences ($p < .100$).

Table 2

Study 1: Linear regressions predicting gratitude and subjective well-being

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	df	<i>p</i>	95% CI
Gratitude						
<hr/>						
Step 1						
Fluency	-0.09	0.03	-3.07	138	.003	[-0.14, -0.31]
Step 2						
Fluency	-0.11	0.03	-3.76	136	< .001	[-0.16, -0.05]
List 3	0.49	0.17	2.81	136	.006	[0.14, 0.83]
List 12	0.56	0.19	2.91	136	.004	[0.18, 0.94]
Step 3						
Fluency	-0.08	0.05	-1.70	134	.091	[-0.17, 0.01]
List 3	0.46	0.18	2.56	134	.012	[0.10, 0.81]
List 12	0.63	0.20	3.18	134	.002	[0.23, 1.02]
List 3 X Fluency	-0.01	0.07	-0.04	134	.972	[-0.13, 0.13]
List 12 X Fluency	-0.12	0.07	-1.58	134	.118	[-0.26, 0.03]
<hr/>						
Subjective Well-Being						
<hr/>						
Step 1						
Fluency	-0.17	0.05	-3.79	138	< .001	[-0.26, -0.08]
Step 2						
Fluency	-0.21	0.04	-4.90	136	< .001	[-0.30, -0.13]
List 3	0.89	0.27	3.35	136	.001	[0.37, 1.42]
List 12	1.20	0.30	4.07	136	< .001	[0.62, 1.78]
Step 3						
Fluency	-0.17	0.07	-2.45	134	.016	[-0.31, -0.03]
List 3	0.84	0.27	3.11	134	.002	[0.31, 1.38]
List 12	1.34	0.30	4.44	134	< .001	[0.75, 1.94]
List 3 X Fluency	0.02	0.10	0.17	134	.864	[-0.18, 0.21]
List 12 X Fluency	-0.20	0.11	-1.81	134	.073	[-0.42, 0.20]

Note. [†] $p < .10$, ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$

Table 3

Study 2: Descriptive statistics for fluency, gratitude, and subjective well-being across condition

Condition	N	Fluency $F(2, 101) = 1.56, p = .216, \eta^2 = .030$		Gratitude $F(2, 102) = 1.26, p = .289, \eta^2 = .024$		Subjective Well-Being $F(2, 101) = 4.10, p = .019, \eta^2 = .075$	
		<i>M</i> (<i>SE</i>)	95% CI	<i>M</i> (<i>SE</i>)	95% CI	<i>M</i> (<i>SE</i>)	95% CI
List 3	43	4.40 ^a (0.38)	[3.65, 5.15]	4.79 ^a (0.13)	[4.53, 5.04]	0.30 ^a (0.24)	[-0.17, 0.77]
List 12	36	4.72 ^{ab} (0.40)	[3.92, 5.53]	5.04 ^a (0.14)	[4.76, 5.32]	0.18 ^a (0.44)	[-0.32, 0.69]
Control	27	3.64 ^b (0.47)	[2.71, 4.57]	4.74 ^a (0.16)	[4.42, 5.06]	-0.72 ^b (0.51)	[-1.30, -0.14]

Note. Means adjusted for the covariate (pre-well-being). Means that do not share a letter reflect significant differences ($p < .050$). Means that share an *italicized* letter reflect marginal differences ($p < .100$).

Table 4

Study 2: Linear regressions predicting gratitude and subjective well-being

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	df	<i>p</i>	95% CI
Gratitude						
Step 1						
Fluency	-0.10	0.03	-3.09	102	.003	[-0.16, -0.04]
Step 2						
Fluency	-0.11	0.03	-3.42	100	.001	[-0.18, -0.05]
List 3	0.16	0.20	0.80	100	.426	[-0.23, 0.55]
List 12	0.42	0.21	2.05	100	.043	[0.01, 0.83]
Step 3						
Fluency	-0.08	0.06	-1.41	98	.163	[-0.20, 0.03]
List 3	0.14	0.20	0.70	98	.486	[-0.26, 0.54]
List 12	0.40	0.21	1.90	98	.060	[-0.02, 0.81]
List 3 X Fluency	-0.06	0.08	-0.77	98	.443	[-0.22, 0.10]
List 12 X Fluency	-0.03	0.08	-0.32	98	.745	[-0.18, 0.13]
Subjective Well-Being						
Step 1						
Fluency	-0.02	0.06	-0.38	101	.704	[-0.15, 0.10]
Step 2						
Fluency	-0.05	0.06	-0.83	99	.409	[-0.18, 0.07]
List 3	1.04	0.38	2.71	99	.008	[0.28, 1.80]
List 12	0.96	0.39	2.44	99	.016	[0.18, 1.74]
Step 3						
Fluency	0.19	0.11	1.77	97	.080	[-0.02, 0.40]
List 3	0.87	0.38	2.31	97	.023	[0.12, 1.62]
List 12	0.84	0.39	2.17	97	.033	[0.07, 1.61]
List 3 X Fluency	-0.33	0.15	-2.22	97	.029	[-0.63, -0.04]
List 12 X Fluency	-0.38	0.15	-2.56	97	.012	[-0.67, -0.09]

Note. [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 5

Study 3: Descriptive statistics for fluency, gratitude, and subjective well-being across condition

Condition	N	Fluency $F(2, 123) = 2.20, p = .115, \eta^2 = .035$		Gratitude $F(2, 123) = 1.81, p = .169, \eta^2 = .029$		Subjective Well-Being $F(2, 123) = 2.25, p = .109, \eta^2 = .035$	
		M (SE)	95% CI	M (SE)	95% CI	M (SE)	95% CI
List 2	42	4.18 ^{ab} (0.42)	[3.36, 5.01]	5.37 ^{ab} (0.15)	[5.08, 5.65]	0.26 ^a (0.19)	[-0.12, 0.65]
List 10	41	4.68 ^a (0.42)	[3.85, 5.52]	5.10 ^{ac} (0.15)	[4.81, 5.39]	0.06 ^{ab} (0.20)	[-0.33, 0.44]
Control	44	3.46 ^b (0.41)	[2.66, 4.27]	4.99 ^{bc} (0.14)	[4.70, 5.27]	-0.30 ^b (0.19)	[-0.68, 0.07]

Note. Means adjusted for the covariate (pre-well-being). Means that do not share a letter reflect significant differences ($p < .050$). Means that share an *italicized* letter reflect marginal differences ($p < .100$).

Table 6

Study 3: Linear regressions predicting gratitude and subjective well-being

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	df	<i>p</i>	95% CI
Gratitude						
Step 1						
Fluency	-0.14	0.03	5.25	124	< .001	[-0.20, -0.08]
Step 2						
Fluency	-0.15	0.03	-5.20	122	< .001	[-0.21, -0.09]
List 2	0.49	0.19	2.61	122	.010	[0.12, 0.86]
List 10	0.30	0.19	1.55	122	.123	[-0.08, 0.67]
Step 3						
Fluency	-0.10	0.05	-2.16	120	.033	[-0.20, -0.10]
List 2	0.47	0.19	2.50	120	.014	[0.10, 0.84]
List 10	0.25	0.19	1.32	120	.190	[-0.13, 0.63]
List 2 X Fluency	-0.13	0.07	-1.82	120	.071	[-0.27, 0.11]
List 10 X Fluency	-0.02	0.07	-0.23	120	.813	[-0.16, 0.13]
Subjective Well-Being						
Step 1						
Fluency	-0.11	0.04	-2.71	124	.008	[-0.19, -0.03]
Step 2						
Fluency	-0.13	0.04	-3.11	122	.002	[-0.21, -0.05]
List 2	0.66	0.26	2.50	122	.014	[0.14, 1.18]
List 10	0.51	0.27	1.92	122	.058	[-0.02, 1.04]
Step 3						
Fluency	-0.03	0.07	-0.50	120	.616	[-0.17, 0.10]
List 2	0.61	0.26	2.29	120	.024	[0.08, 1.13]
List 10	0.46	0.27	1.73	120	.086	[-0.07, 0.99]
List 2 X Fluency	-0.19	0.10	-1.86	120	.066	[-0.38, 0.01]
List 10 X Fluency	-0.11	0.10	-1.04	120	.300	[-0.31, 0.10]

Note. [†] $p < .10$, ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$

Table 7

Study 4: Descriptive statistics for fluency, gratitude, and subjective well-being across condition

Condition	N	Fluency $F(2, 240) = 38.68, p < .001, \eta^2 = .244$		Gratitude $F(2, 240) = .248, p = .781, \eta^2 = .002$		Subjective Well-Being $F(2, 239) = 4.04, p = .019, \eta^2 = .033$	
		<i>M</i> (<i>SE</i>)	95% CI	<i>M</i> (<i>SE</i>)	95% CI	<i>M</i> (<i>SE</i>)	95% CI
Normal	78	5.56 ^a (0.26)	[5.04, 6.07]	5.57 ^a (0.10)	[5.37, 5.78]	0.30 ^a (0.18)	[-0.07, 0.66]
Hard is Okay	73	5.56 ^a (0.26)	[5.03, 6.09]	5.61 ^a (0.11)	[5.40, 5.82]	0.16 ^a (0.19)	[-0.21, 0.54]
Control	93	2.88 ^b (0.24)	[2.40, 3.35]	5.51 ^a (0.09)	[5.33, 5.70]	-0.37 ^b (0.17)	[-0.70, -0.04]

Note. Means adjusted for the covariate (pre-well-being). Means that do not share a letter reflect significant differences ($p < .050$). Means that share an *italicized* letter reflect marginal differences ($p < .100$).

Table 8

Study 4: Linear regressions predicting gratitude and subjective well-being

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	df	<i>p</i>	95% CI
Gratitude						
Step 1						
Fluency	-0.07	0.02	-3.40	241	.001	[-0.12, -0.03]
Step 2						
Fluency	-0.11	0.02	-4.34	239	< .001	[-0.15, -0.06]
Normal	0.35	0.15	2.30	239	.022	[0.05, 0.64]
Hard is Okay	0.38	0.15	2.53	239	.012	[0.08, 0.68]
Step 3						
Fluency	-0.11	0.04	-2.75	237	.006	[-0.19, -0.03]
Normal	0.35	0.16	2.26	237	.025	[0.05, 0.66]
Hard is Okay	0.39	0.16	2.41	237	.017	[0.07, 0.71]
Normal X Fluency	0.01	0.06	0.14	237	.889	[-0.11, 0.12]
Hard is Okay X Fluency	0.01	0.06	0.18	237	.856	[-0.11, 0.13]
Subjective Well-Being						
Step 1						
Fluency	-0.02	0.04	-0.41	240	.680	[-0.10, 0.06]
Step 2						
Fluency	-0.09	0.05	-2.08	238	.039	[-0.18, -0.01]
Normal	0.92	0.28	3.31	238	.001	[0.37, 1.46]
Hard is Okay	0.79	0.28	2.81	238	.005	[0.24, 1.34]
Step 3						
Fluency	-0.03	0.08	-0.39	236	.694	[-0.18, 0.12]
Normal	0.78	0.29	2.73	236	.007	[0.22, 1.35]
Hard is Okay	0.81	0.30	2.74	236	.007	[0.23, 1.39]
Normal X Fluency	-0.04	0.11	-0.33	236	.739	[-0.24, 0.17]
Hard is Okay X Fluency	-0.19	0.11	-1.67	236	.097	[-0.41, 0.03]

Note. [†] $p < .10$, ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$

Table 9

Study 5: Descriptive statistics for fluency, gratitude, and subjective well-being across condition

Condition	<i>N</i>	Fluency <i>F</i> (2, 198) = 25.21, <i>p</i> < .001, $\eta^2 = .203$		Gratitude <i>F</i> (3, 287) = .40, <i>p</i> = .753, $\eta^2 = .004$		Subjective Well-Being <i>F</i> (3, 287) = 5.80, <i>p</i> = .001, $\eta^2 = .057$	
		<i>M</i> (<i>SE</i>)	95% CI	<i>M</i> (<i>SE</i>)	95% CI	<i>M</i> (<i>SE</i>)	95% CI
Normal	56	4.84 ^a (0.35)	[4.16, 5.53]	5.51 ^a (0.13)	[5.26, 5.77]	0.24 ^{ab} (0.20)	[-0.15, 0.62]
Hard is Meaningful	63	5.02 ^a (0.33)	[4.37, 5.68]	5.59 ^a (0.12)	[5.35, 5.83]	0.51 ^a (0.19)	[0.15, 0.88]
Active Control	86	2.32 ^b (0.28)	[1.77, 2.88]	5.63 ^a (0.10)	[5.42, 5.83]	-0.07 ^{bc} (0.16)	[-0.39, 0.24]
Baseline Control	87	-	-	5.48 ^a (0.10)	[5.28, 5.68]	-0.45 ^c (0.16)	[-0.76, -0.14]

Note. Means adjusted for the covariate (pre-well-being). Means that do not share a letter reflect significant differences (*p* < .050).

Means that share an *italicized* letter reflect marginal differences (*p* < .100).

Table 10

Study 5: Linear regressions predicting gratitude and subjective well-being

Variable	<i>B</i>	<i>SE</i>	<i>t</i>	df	<i>p</i>	95% CI
Gratitude						
Step 1						
Fluency	-0.11	0.22	-4.91	199	< .001	[-0.15, -0.06]
Step 2						
Fluency	-0.13	0.02	-5.21	197	< .001	[-0.18, -0.08]
Normal	0.21	0.17	1.26	197	.210	[-0.12, 0.53]
Hard is Meaningful	0.29	0.16	1.80	197	.073	[-0.03, 0.62]
Step 3						
Fluency	-0.07	0.05	-1.44	195	.153	[-0.17, 0.03]
Normal	0.12	0.17	0.71	195	.478	[-0.22, 0.47]
Hard is Meaningful	0.25	0.17	1.43	195	.155	[-0.10, 0.59]
Normal X Fluency	-0.06	0.06	-1.00	195	.318	[-0.18, 0.06]
Meaningful X Fluency	-0.09	0.06	-1.44	195	.151	[-0.22, 0.03]
Subjective Well-Being						
Step 1						
Fluency	-0.11	0.04	-3.04	199	.003	[-0.15, -0.06]
Step 2						
Fluency	-0.18	0.04	-4.64	197	< .001	[-0.18, -0.08]
Normal	0.75	0.27	2.84	197	.005	[-0.12, 0.53]
Hard is Meaningful	1.06	0.26	4.03	197	< .001	[-0.03, 0.62]
Step 3						
Fluency	-0.02	0.08	-0.31	195	.756	[-0.17, 0.03]
Normal	0.62	0.28	2.25	195	.026	[-0.22, 0.47]
Hard is Meaningful	0.78	0.28	2.83	195	.005	[-0.10, 0.59]
Normal X Fluency	-0.27	0.10	-2.78	195	.006	[-0.18, 0.06]
Meaningful X Fluency	-0.13	0.10	-1.28	195	.201	[-0.22, 0.03]

Note. [†] $p < .10$, ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$

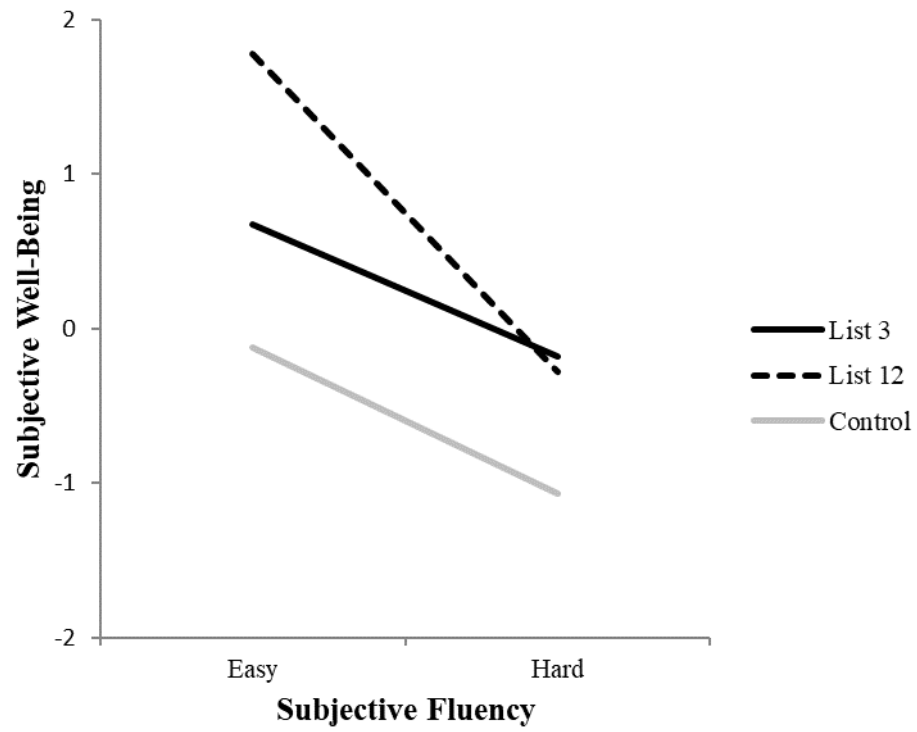


Figure 1. Study 1: Interaction of condition with subjective fluency predicting reported SWB.

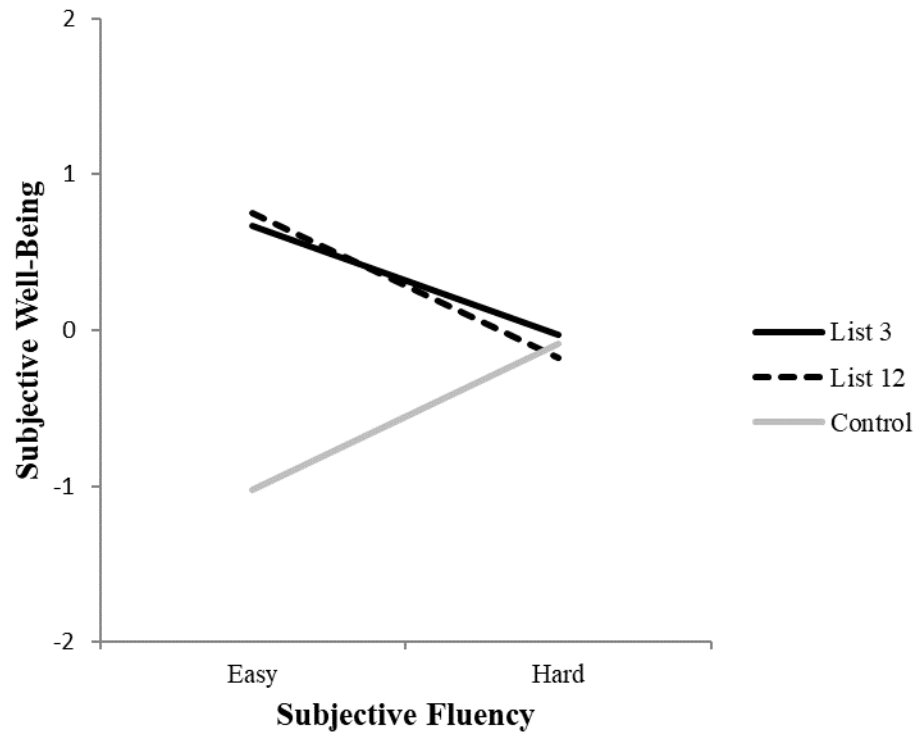


Figure 2. Study 2: Interaction of condition with subjective fluency predicting reported SWB.

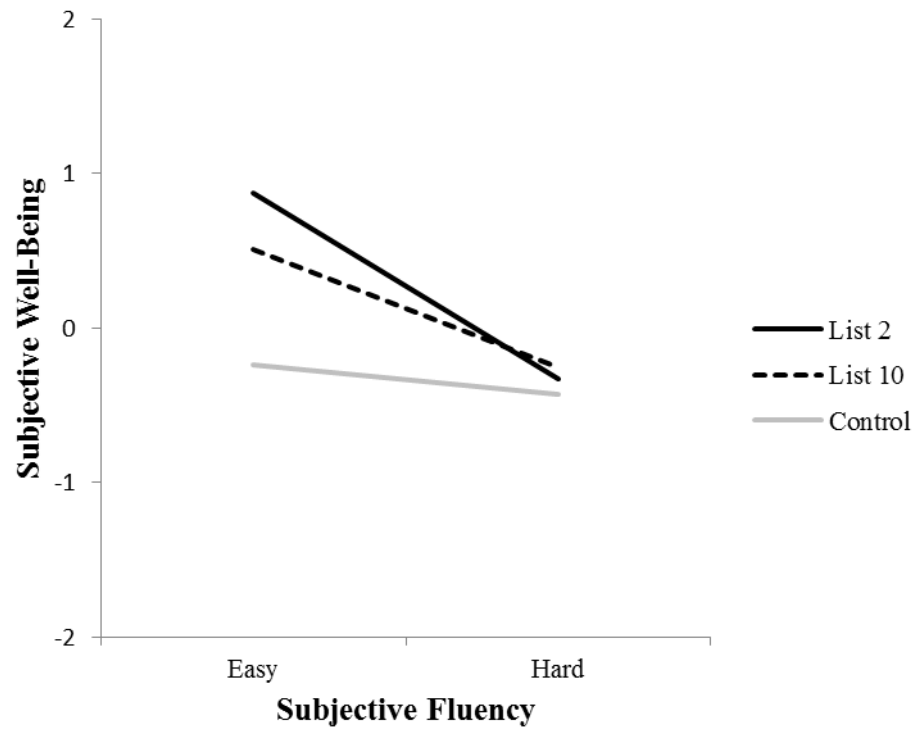


Figure 3. Study 3: Interaction of condition with subjective fluency predicting reported SWB.

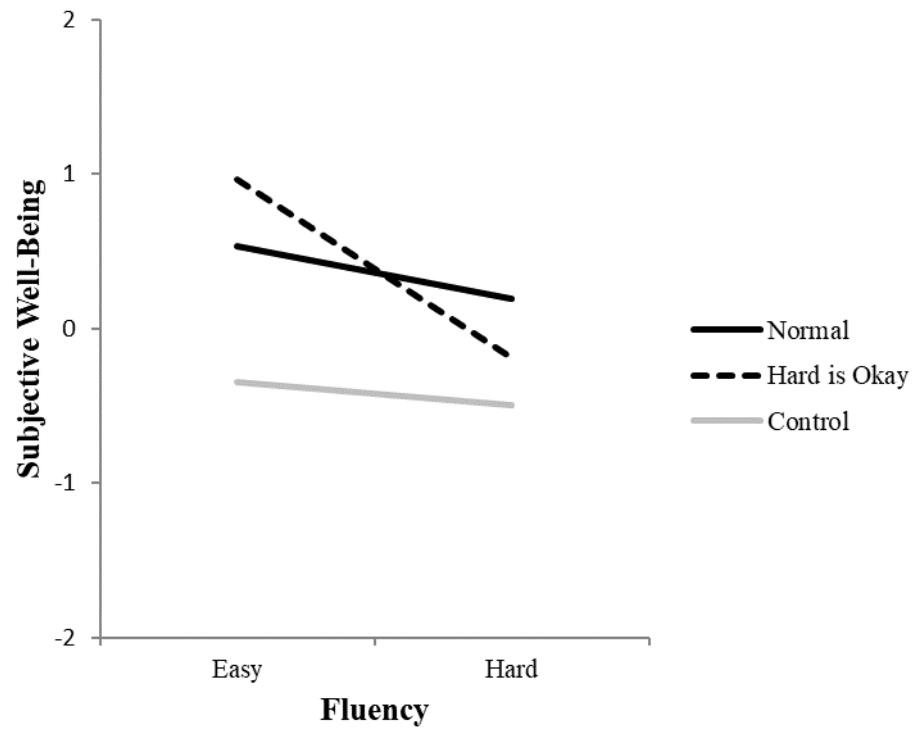


Figure 4. Study 4: Interaction of condition with subjective fluency predicting reported SWB.

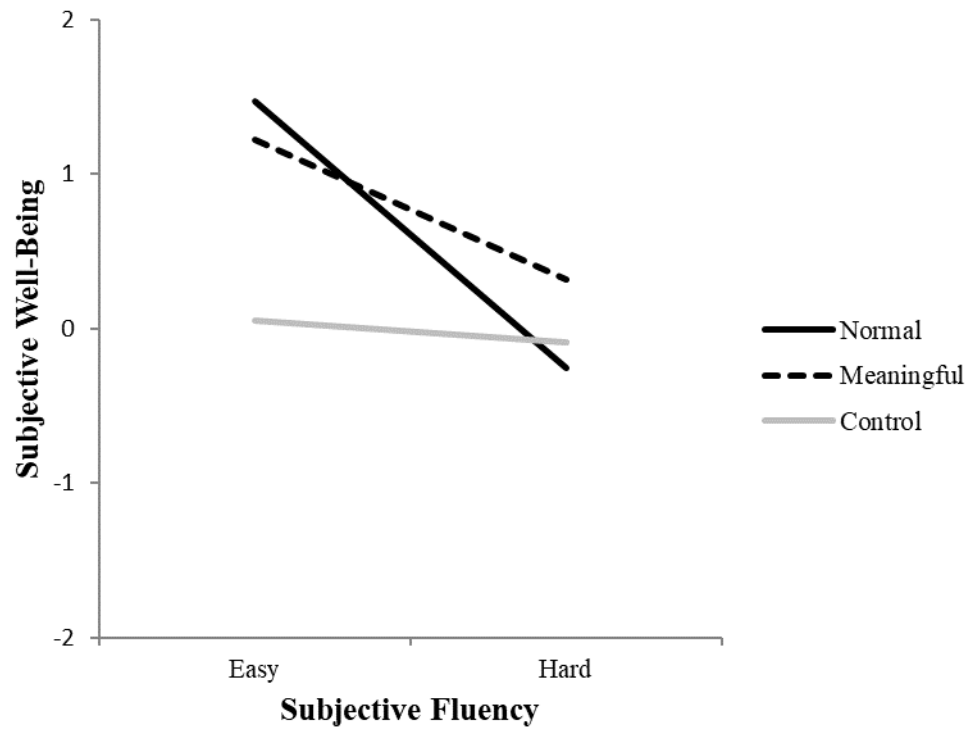


Figure 5. Study 5: Interaction of condition with subjective fluency predicting reported SWB.